

LM04 · CORPORATE ISSUERS · CFA LEVEL I

Working Capital and Liquidity

How issuers finance day-to-day operations and keep cash flowing through the cycle

What This Reading Covers

This module examines the short-term side of the issuer: the time it takes to convert operating inputs into cash (the **cash conversion cycle**), how to measure an issuer's ability to meet short-term obligations (**liquidity**), and the **sources** an issuer taps to fund those obligations.

Learning Outcome Statements

LOS a Explain the cash conversion cycle and compare issuers' cash conversion cycles

LOS b Explain liquidity and compare issuers' liquidity levels

LOS c Describe issuers' primary and secondary sources of liquidity and the factors affecting liquidity needs

Core Definitions

$$\text{WorkingCapital} = \text{CurrentAssets} - \text{CurrentLiabilities}$$

Net working capital strips out non-operating items: subtracts cash and marketable securities from current assets, and subtracts short-term/current debt from current liabilities.

$$\text{NetWC} = (CA - \text{cash} - \text{marketablesecurities}) - (CL - \text{short} - \text{termdebt} - \text{currentdeb})$$

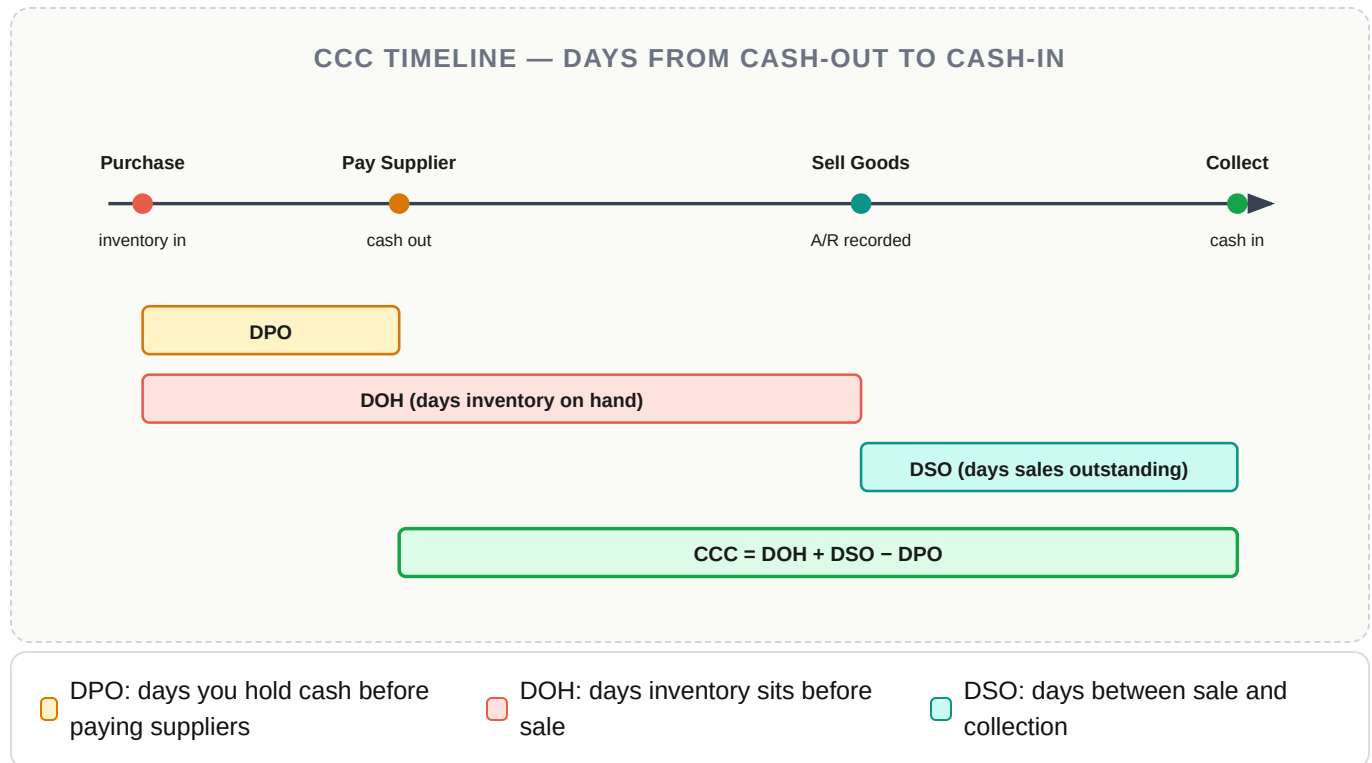
Issuer liquidity = the ability to pay short-term liabilities. It depends on the amount and liquidity of short-term assets and liabilities, the business model, and the cash conversion cycle.

Exam Tip: Working capital levels and the cash conversion cycle are **positively correlated**. Reduce one and you reduce the other. Lower working capital generally means more efficient operations.

LOS A · THE CASH CONVERSION CYCLE

From Cash Out to Cash In

For a company that makes and sells physical goods, cash follows a predictable loop: **purchase raw materials** → **build inventory** → **sell finished goods** → **collect receivables** → **cash**. The **operating cycle** is how long it takes to move from raw materials to cash collected. The **cash conversion cycle (CCC)** subtracts the time you finance with supplier credit.



$$CCC = DOH + DSO - DPO$$

The CCC measures the time an issuer's cash is tied up before coming back in from customers. Shorter (or negative) = better.

LOS A · BUILDING THE CYCLE COMPONENTS

DOH, DSO, DPO — The Three Day-Ratios

Days of Inventory on Hand (DOH)

$$\text{DOH} = \text{Inventory} \div (\text{COGS} \div 365)$$

Average number of days inventory is held before being sold. **Lower DOH** means inventory turns faster — capital not tied up sitting on shelves.

Days Sales Outstanding (DSO)

$$\text{DSO} = \text{Accounts Receivable} \div (\text{Revenue} \div 365)$$

Average number of days between a sale and cash collection. **Lower DSO** means customers pay faster.

Days Payable Outstanding (DPO)

$$\text{DPO} = \text{Accounts Payable} \div (\text{Purchases} \div 365)$$

Average number of days the issuer takes to pay its suppliers. **Higher DPO** = you use supplier credit longer (free financing), but may forgo prompt-payment discounts.

In practice COGS is often used as a proxy for purchases when purchases are not disclosed.

How to Shorten the Cycle

COMPONENT	LEVER
Reduce DOH	Discontinue low-demand products · just-in-time deliveries · improve demand forecasts with data analytics
Reduce DSO	Prompt-payment discounts · late fees · tighter credit standards · upfront deposits · third-party collection
Increase DPO	Negotiate longer payment terms with suppliers — but may miss prompt-payment discounts

Exam Tip: Each shortening lever has a cost: shrinking inventory can cause stockouts or supply-chain disruption; tightening credit can lose sales; stretching payables can mean forgoing discounts and is typically *more* expensive than bank borrowing.

LOS A · WORKED EXAMPLE — NEGATIVE CCC

Inditex (Zara) — Cash Generated from Operations

A shorter, or even **negative**, CCC means an issuer collects from customers *before* it has to pay suppliers — suppliers are effectively financing the business, and operations *generate* cash. Amazon, Dell, and fast-fashion giants like Inditex famously operate with negative CCCs.

EXAMPLE**Inditex S.A. — 2021 Cash Conversion Cycle****GIVEN (EUR MILLIONS, 2021)**

Accounts Receivable	842
Inventories	3,042
Accounts Payable	6,199
Sales (Revenue)	27,716
Cost of Goods Sold	11,902

FIND

The cash conversion cycle in days.

SOLUTION**STEP-BY-STEP****1****DSO** — days sales outstanding

$$\text{DSO} = 842 \div (27,716 \div 365) = (842 \div 27,716) \times 365 \approx 11 \text{ days}$$

2**DOH** — days of inventory on hand

$$\text{DOH} = 3,042 \div (11,902 \div 365) = (3,042 \div 11,902) \times 365 \approx 93 \text{ days}$$

3**DPO** — days payable outstanding (using COGS as proxy for purchases)

$$\text{DPO} = 6,199 \div (11,902 \div 365) = (6,199 \div 11,902) \times 365 \approx 190 \text{ days}$$

4

CCC — combine

$$\text{CCC} = \text{DOH} + \text{DSO} - \text{DPO} = 93 + 11 - 190 = -86 \text{ days}$$

ANSWER

CCC ≈ -86 days

DSO	11
DOH	93
DPO	(190)
Net Working Capital = (842 + 3,042) - 6,199	(2,315)
NWC ÷ Sales = -2,315 ÷ 27,716	-8.35%

TAKEAWAY

A negative CCC means cash is *freed up* — Inditex collects from customers about 86 days before it needs to pay suppliers. Operations are a net source of financing.

LOS A · COMPARING CCCS ACROSS ISSUERS

Industry Context Matters

CCC must be read in context. A long CCC may be a **function of the industry** (e.g., pharmaceuticals carry long inventory cycles due to R&D and regulatory-approval lead times). A long CCC **relative to industry peers**, however, signals an issue.

Long / Negative CCC — Industry-Driven

- **Airlines:** customers pay at or before service (ticket sales); inventory is negligible — short/negative cycles are normal.
- **Pharmaceuticals:** long product-development pipelines, regulatory approvals, distribution — long CCCs reflect the business, not inefficiency.

Long CCC vs. Peers — Problem Signal

When a company's CCC is materially longer than close industry peers, it may indicate:

- Obsolete or slow-moving inventory
- Weak credit/collection discipline
- Lost bargaining power with suppliers

How CCC Connects to Liquidity

A long CCC ties up cash in operating assets — so the company must fund the gap with external financing (bank lines, trade credit, short-term debt). A short/negative CCC reduces the need for working-capital financing and *strengthens* liquidity without any change in external funding.

Rule of thumb: Working capital levels and the cash conversion cycle are **positively correlated**. Shortening CCC typically reduces the working capital the issuer must fund.

QUIZ 1 · CHECKPOINT

Test Your Understanding: Cash Conversion Cycle

Q1. A company reports: Inventory 1,500; *A/R* 800; *A/P* 900; *Revenue* 10,000; COGS \$6,000. Using COGS as the proxy for purchases, the cash conversion cycle is *closest* to:

Q2. Which action would *most likely* shorten a company's cash conversion cycle?

Q3. A fast-fashion retailer reports: DOH 93, DSO 11, DPO 190. Its CCC indicates:

Q4. A pharmaceutical company has a CCC of 220 days while its close peers cluster near 210 days. This is *best* described as:

LOS B · LIQUIDITY DEFINED

Asset Liquidity vs. Issuer Liquidity

Asset/Liability Liquidity — Nearness to Cash / Settlement

	MORE LIQUID →	LESS LIQUID
Assets	Cash · Short-term investments · Accounts Receivable	Inventory
Liabilities	Accrued payroll · Accounts payable · Lease payment due in one month	Short-term debt

Issuer Liquidity

Issuer liquidity = the ability to meet short-term obligations using cash flows and assets that can be readily transformed into cash. It depends on:

- Amounts and liquidity of short-term assets and liabilities
- The business model
- The cash conversion cycle

If short-term liabilities > cash on hand, the issuer must rely on **other sources of liquidity**.

Drags and Pulls on Liquidity

Drag on Liquidity

Cash inflows lag

- Uncollected receivables
- Obsolete inventory
- Borrowing constraints

Pull on Liquidity

Cash outflows accelerate

- Early payments (demanded or required)
- Reduced credit limits from suppliers
- Limits on short-term lines of credit
- Low liquidity position at counterparties

LOS B · MEASURING LIQUIDITY

The Three Balance-Sheet Liquidity Ratios

All three measure short-term solvency against current liabilities. They differ in what they count as "available resources" — and become **progressively more conservative** as each adds a layer of strictness.

Current Ratio

$$\text{CurrentRatio} = \text{CurrentAssets} \div \text{CurrentLiabilities}$$

The broadest measure. Assumes inventory and receivables are liquid. Higher ratio = higher liquidity. Lower ratio = reliance on operating cash flow or external financing.

Quick Ratio (Acid-Test)

$$\text{QuickRatio} = (\text{Cash} + \text{Short-TermMarketableInvestments} + \text{Receivables}) \div \text{CurrentLiabilities}$$

Excludes inventory — more conservative than the current ratio. Reflects assets that can truly be turned to cash quickly.

Cash Ratio

$$\text{CashRatio} = (\text{Cash} + \text{Short-TermMarketableInvestments}) \div \text{CurrentLiabilities}$$

The most conservative — a **crisis measure**. Tests whether the issuer could pay current liabilities using only cash and near-cash investments.

Example: Year-on-Year Movements

	20X2	20X1	SIGNAL
Net Working Capital	65	16	Improved cushion
Current Ratio	1.52	1.36	Stronger on broad measure

	20X2	20X1	SIGNAL
Quick Ratio	0.89	1.00	Weaker without inventory
Cash Ratio	0.50	0.60	Weakest — cash position deteriorated

A higher current ratio with falling quick and cash ratios suggests the improvement is driven by inventory build-up rather than true liquidity.

Exam Tip: The level of liquidity required differs by industry — banks need far more than ordinary operating companies. Whether liquidity is "adequate" depends on historical funding needs and access to capital.

LOS C · PRIMARY LIQUIDITY SOURCES

Readily Accessible Cash — Use Does Not Affect Operations

Primary sources of liquidity are the most readily accessible pools of cash available to an issuer. Using them is unlikely to affect ongoing operations.

1. Cash and Marketable Securities on Hand

Can be sold quickly without loss of value. The most liquid source — no signalling cost.

2. Borrowings

Bank borrowings (credit lines), public debt (bondholders), and **supplier credit** (trade credit). Bank lines can be pre-arranged so that liquidity is available on demand.

3. Cash Flow from the Business

The *primary long-term* source of liquidity. Analysts evaluate it using the statement of cash flows.

Cash Flow from Operations (CFO)

$$\begin{aligned}
 & \text{Cash received from customers } X \\
 & + \text{Interest/dividends received } X \\
 & - \text{Cash paid to suppliers/employees } (X) \\
 & \quad - \text{Taxes paid } (X) \\
 & \quad - \text{Interest paid } (X) \\
 & = \text{CFO } X
 \end{aligned}$$

Does not account for capital investment required.

Free Cash Flow (FCF)

$$\begin{aligned}
 & \text{Cash Flow from Operations } X \\
 & - \text{Investment in long-term assets } (X) \\
 & = \text{Free Cash Flow } X
 \end{aligned}$$

Generating cash from operations takes time — this is a long-term lever.

Assessing Primary Source Quality

- Can marketable securities be sold **without loss of value**?
- Is the bank line **committed** (legally binding) or merely available?
- Is CFO sufficient, stable, and *growing*?

LOS C • SECONDARY LIQUIDITY SOURCES

Use Signals Deteriorating Financial Health

Secondary sources of liquidity are more costly, send negative signals to the market, and may impair the business. Analysts flag any reliance on them.

SECONDARY SOURCE	DOWNSIDE / SIGNAL
Suspending or reducing dividends	Negative signal to shareholders
Delaying/reducing capital expenditures	Missed investment opportunities; long-run value impact
Issuing equity	Dilutes existing shareholders
Renegotiating contract terms	E.g., converting short-term → long-term debt, rents, leases, supplier terms — signals distress
Selling assets	Receive less than fair value; loss of earning power
Filing for bankruptcy	Protection from creditors and chance to restructure debt — but severe reputational and governance cost

Example — Firm Evaluating Asset Sales in a Liquidity Crisis

ASSET	FAIR VALUE (CADM)	LIQUIDATION COST %	NET PROCEEDS
Short-term marketable securities	10	0%	10.0
Inventories and receivables	20	10%	18.0
Real estate	50	15%	42.5
Subsidiary	30	20%	24.0

ASSET	FAIR VALUE (CADM)	LIQUIDATION COST %	NET PROCEEDS
Total	110		94.5

Total liquidation cost = CAD 15.5m (about 14% of fair value). The further from cash, the bigger the discount.

Key distinction: primary sources are used in the normal course of business; secondary sources usually come *after* the primary sources are exhausted, and they carry reputation, tax, and opportunity costs.

LOS C · WHAT DRIVES LIQUIDITY NEEDS

Factors That Shape How Much Liquidity an Issuer Must Hold

Two issuers in different industries may have very different liquidity needs despite similar balance sheets. The main factors:

Industry Type and Business Model

Banks face regulatory capital and reserve requirements that drive far higher liquidity than most operating firms. A firm with a long CCC (pharma, heavy manufacturing) needs more working-capital financing than one with a short/negative CCC (airlines, fast-fashion retailers).

Seasonality

Current assets can be split into **permanent** and **variable** (seasonal). Permanent current assets stay relatively constant year-round; variable current assets swing with seasonal inventory and staffing needs. A firm with sharp seasonality needs more liquidity buffer to fund the peak.

Size and Creditworthiness

Larger, higher-rated firms have access to more sources of credit (commercial paper, committed bank lines), often with lower costs and fewer restrictions. Smaller or weaker credits may face borrowing constraints and higher implied funding costs.

Interest-Rate Environment

Rising rates raise the cost of short-term borrowing — issuers expecting rising rates may lock in long-term funding; those expecting falling rates may favour short-term debt.

Legal and Regulatory Considerations

In less-developed capital markets, issuers rely more on **trade credit** because bank credit is scarce. Regulated industries (notably banks) face explicit regulatory liquidity rules — capital requirements, access to central-bank funds.

Underlying Assets

Assets that are attractive as collateral (real estate, receivables) expand an issuer's secured-borrowing capacity and reduce the liquidity cushion it must hold in cash.

Net working capital to sales ratio ($\text{Net WC} \div \text{Sales}$) allows comparison across firms of different sizes. Lower (or negative) levels indicate more efficient working-capital management.

QUIZ 2 · CHECKPOINT

Test Your Understanding: Liquidity & Sources

Q5. A company has: Cash 40; *Marketable securities* 70; A/R 85; *Inventory* 130; Prepaid accounts 10; *A/P* 130; Accrued expenses 30; *Short-term bank loan* 60. Its *quick ratio* is closest to:

Q6. An analyst observes that a firm's current ratio rose year-over-year while its cash ratio fell. The *most likely* explanation is:

Q7. Which of the following is *least likely* considered a primary source of liquidity?

Q8. An analyst sees three trends: (1) days sales outstanding rising, (2) days of inventory on hand rising, (3) supplier credit limits being increased. The *net* effect on liquidity is *best* described as:

Q9. Which statement about the cash ratio is *most accurate*?

WORKING CAPITAL MANAGEMENT

Three Approaches: Conservative · Moderate · Aggressive

Issuers choose where to sit on a spectrum that trades **financial flexibility** against **financing cost**. The choice shapes both the level of short-term assets held and the maturity of the financing used.

WORKING-CAPITAL APPROACHES AT A GLANCE

CONSERVATIVE

Large short-term assets
Long-term debt & equity

Higher cost, more flexible
Early-growth firms
Rising-rate environment

MODERATE (MATCHED)

Moderate short-term assets
Match funding: permanent → LT
variable → ST

Diversified funding
Flexible for seasonal needs

AGGRESSIVE

Small short-term assets
Short-term debt heavy

Lower cost, less flexible
Low-margin firms
Rollover risk

Side-by-Side Detail

	CONSERVATIVE	MODERATE	AGGRESSIVE
Short-term assets vs sales	Large	Moderate	Small
Reliance	Long-term debt & equity	Match funding	Short-term finance
Pros	Flexibility; rollover risk low; known costs	Seasonal flex; diversified sources	Lower cost; borrow only as needed
Cons	Higher cost; longer lead time	Still exposed to rate moves on ST piece	Variable costs; rollover/bankruptcy risk
Best when	Rates flat or rising; early growth	CCC shortening gradually	Stable/falling rates; predictable cash needs

Permanent vs Variable current assets: permanent current assets stay relatively constant year-round (baseline inventory, receivables); variable current assets swing with seasonality (peak inventory, seasonal staffing). Matching each to a financing maturity is the moderate approach.

SHORT-TERM FINANCING STRATEGY

Building a Short-Term Funding Plan

Financial flexibility is maximised by developing and regularly reviewing a short-term financing strategy. The plan should:

- 1 Maintain **sufficient and diversified** sources of credit to fund ongoing needs.
- 2 Secure **adequate capacity** to handle changing and peak cash needs.
- 3 Ensure sources have **competitive terms**.
- 4 Understand how rates may change with market conditions.
- 5 Include **explicit and implicit** funding costs in the effective-cost calculation (e.g., cost of supplier financing).

The Cost of Trade Credit

Suppliers often offer prompt-payment discounts. **Terms 2/10 net 30** means: 2% discount for payment by day 10; otherwise the full amount is due by day 30. Paying on day 30 instead of day 10 is effectively borrowing from the supplier for 20 days.

$$\text{Cost of trade credit} = (1 + \text{discount} / (1 - \text{discount}))^{365 / (\text{days beyond discount period})} - 1$$

WORKED EXAMPLE

Forgoing 2/10 net 30 vs. using a 7.7% credit line

GIVEN

Terms: 2/10 net 30. External credit line EAR = 7.7%. Choose the cheaper option.

SOLUTION

STEP-BY-STEP

- 1 On 100 : *pay* 98 on day 10, or 100 *on day* 30. *Forgoing discount costs* 2 per \$98 over 20 days.

$$20\text{-day cost} = 2 / 98 \approx 2.04\%$$

- 2 Annualise to an EAR by compounding over $365/20 = 18.25$ periods.

$$\text{EAR} = (1 + 2/98)^{365/20} - 1 = (1.0204)^{18.25} - 1 \approx 44.6\%$$

3

Compare: 44.6% (forgo discount) vs. 7.7% (credit line). Borrow from the credit line and pay early — much cheaper.

ANSWER

Borrow on the credit line at 7.7%, pay supplier by day 10

General rule: any external borrowing rate **below 44.6%** beats forgoing a 2/10 net 30 discount.

Exam Tip: The implicit cost of supplier financing is typically much higher than bank borrowing — forgoing prompt-payment discounts is rarely the cheapest form of short-term finance.

QUIZ 3 · CHECKPOINT

Test Your Understanding: Funding & Management

Q10. A supplier offers terms 1/10 net 30. The approximate effective annual rate of forgoing the discount is *closest* to:

Q11. An issuer that holds a large position in current assets and finances most of them with long-term debt and equity is *best* described as following a:

Q12. A firm with aggressive working-capital management is *most* exposed to:

Q13. A firm wants to shorten its cash conversion cycle. Which pair of actions is *most* consistent with that goal while minimising customer-sale losses?

MODULE COMPLETE

Your Scorecard

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LM04 Key Takeaways — Exam-Ready Cheat Sheet

Cycle Mechanics

- 1 **CCC** = **DOH** + **DSO** – **DPO**. Shorter (or negative) = better. Operations generate cash when CCC is negative.
- 2 **DOH** = Inventory / (COGS/365) · **DSO** = A/R / (Revenue/365) · **DPO** = A/P / (Purchases/365), COGS often used as proxy.
- 3 Levers: reduce DOH (JIT, demand analytics, discontinue slow SKUs) · reduce DSO (prompt-payment discounts, tighter credit, collection agencies) · increase DPO (negotiate longer supplier terms).

Liquidity

- 4 **Current Ratio** = CA / CL (broadest). **Quick Ratio** = (Cash + MS + A/R) / CL (excludes inventory). **Cash Ratio** = (Cash + MS) / CL (crisis measure, most conservative).
- 5 **Drag** on liquidity = lagging inflows (uncollected A/R, obsolete inventory, borrowing limits). **Pull** = accelerating outflows (early payments, reduced credit lines).
- 6 **Working capital** = CA – CL. **Net working capital** excludes cash/marketable securities from CA and short-term/current debt from CL.

Sources & Approaches

- 7 **Primary sources**: cash and marketable securities · bank/bond borrowings and supplier credit · cash flow from the business (long-term primary).

- 8 **Secondary sources:** suspend dividends · delay capex · issue equity · renegotiate debt/leases · sell assets · file bankruptcy — each signals distress.
- 9 **Approaches:** conservative (large CA, LT finance, flexible, costly) · moderate (match maturities) · aggressive (small CA, ST finance, cheap, rollover risk).
- 10 **Trade credit EAR:** $(1 + d/(1-d))^{365/(n-\text{disc.period})} - 1$. 2/10 net 30 $\approx 44.6\%$. 1/10 net 30 $\approx 20\%$.
Beat it with any cheaper external line.

Last-Minute Exam Checklist

CCC: DOH + DSO – DPO · shorter = better · negative means suppliers finance operations

DOH: $\text{Inv} / (\text{COGS}/365)$ · **DSO:** $\text{AR} / (\text{Rev}/365)$ · **DPO:** $\text{AP} / (\text{COGS}/365)$

Current > Quick > Cash ratios (broadest to most conservative)

Drag: slow inflows · **Pull:** fast outflows

Primary liquidity: cash/MS · borrowings · CFO · **Secondary:** cut dividends, sell assets, issue equity, bankruptcy

Approaches: Conservative (large CA, LT) · Moderate (match) · Aggressive (small CA, ST)

2/10 net 30 EAR $\approx 44.6\%$ — typically beats bank borrowing