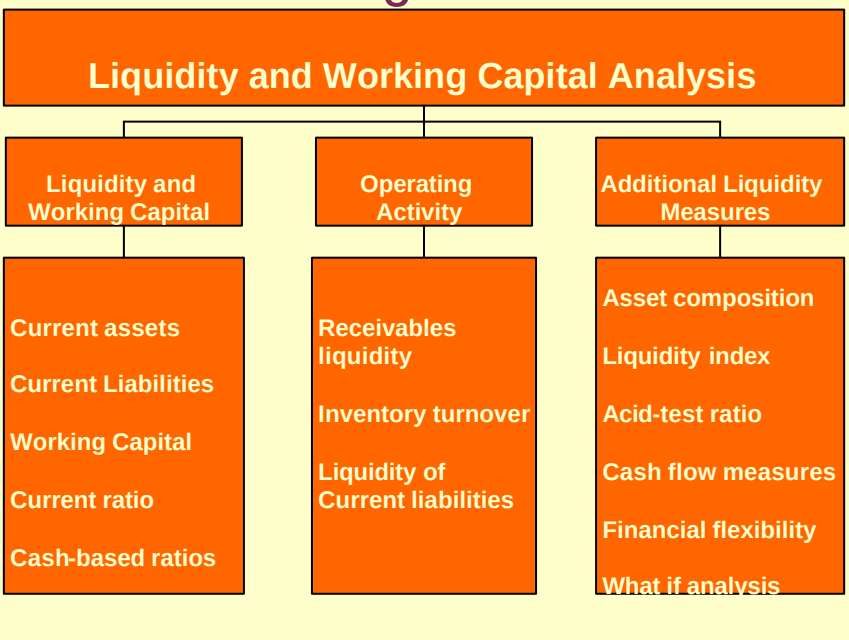
Liquidity & Working Capital Analysis

9

Lecture

Lecture 9: Agenda

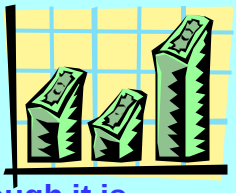


Liquidity and Working Capital

Basics

Company Liquidity refers to the ability to meet short-term obligations

***Liquidity* is the ability to convert assets into cash or to obtain cash**



***Short term* is a period up to one year, though it is identified with the normal operating cycle of a company**

Liquidity and Working Capital

Basics

Liquidity is a matter of degree

Lack of liquidity can limit:

- **Advantages of favorable discounts**
- **Profitable opportunities**
- **Management actions**
- **Coverage of current obligations**

Severe illiquidity often precedes:

- **Lower profitability**
- **Restricted opportunities**
- **Loss of owner control**
- **Loss of capital investment**
- **Insolvency and bankruptcy**

Liquidity and Working Capital

Current Assets

Current assets are cash and other assets reasonably expected to be (1) realized in cash, or (2) sold or consumed, during the longer of one-year or the company's operating cycle

Current assets include:

Cash -- ultimate liquid asset

Cash equivalents -- temporary investments of excess cash

Marketable securities -- debt or equity securities held as s-t investments

Accounts receivable -- mounts due from credit sales

Inventories -- items held for sale in the normal course of business

Prepaid expenses -- advance payments for services and supplies

Liquidity and Working Capital

Current Assets

Classification as current asset depends on:

1. Managment's intent
2. Industry practice

Analysis must assess this classification

1. Is classification as current asset appropriate?
2. If not, then adjust accounts and amounts among current and noncurrent

Liquidity and Working Capital

Current Liabilities

Current liabilities are obligations expected to be satisfied within a relatively short period of time, usually one year

Current liabilities include:

Accounts payable
Notes payable
Short-term bank loans
Tax payable
Accrued expenses
Current portion of long-term debt

Liquidity and Working Capital

Current Liabilities

Classification as current liability depends on:

1. Managment's intent
2. Industry practice

Analysis must assess this classification

1. Is classification as current liability appropriate?
2. If not, then adjust accounts and amounts among current and noncurrent
3. Are current liabilities reported?
4. If not, then adjust accounts for these amounts—potential examples:
   - Contingent liabilities associated with loan guarantees
   - Future minimum rental payments under noncancelable operating leases
   - Progress payments under contracts
   - Current deferred tax liabilities (and assets)

Liquidity and Working Capital

Working Capital

Working capital is

- defined as the excess of current assets over current liabilities
- Widely used measure of short-term liquidity
- Deficient when current liabilities exceed current assets
- In surplus when current assets exceed current liabilities
- A margin of safety for creditors
- A liquid reserve to meet contingencies and uncertainties
- A constraint for technical default in many debt agreements

Liquidity and Working Capital

Working Capital

Working capital more relevant when related to other key variables such as

- ✧ Sales
- ✧ Total assets

Working capital is of limited value as an absolute amount

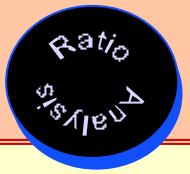
Liquidity and Working Capital

Current Ratio

$$\textit{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Current Ratio Reflects on:

- ***Current liability coverage*** **-- assurance in covering current liabilities**
- ***Buffer against losses*** **-- margin of safety for shrinkage in noncash current assets**
- ***Reserve of liquid funds*** **--margin of safety against uncertainties and shocks to cash flows**



Liquidity and Working Capital

Current Ratio

Current Ratio — Limitations:

If liquidity is the ability to meet cash outflows with adequate cash inflows, then does the current ratio:

- **Measure and predict the pattern of future cash inflows and outflows?**
- **Measure the adequacy of future cash inflows to outflows?**

Answer is generally no to both these questions

Current ratio

- **Is a static measure**
- **Does not have a causal relation to future cash inflows**

Liquidity and Working Capital

Current Ratio

Some important qualifications

1. Liquidity depends to a large extent on prospective cash flows
2. No direct relation between working capital account balances and patterns of future cash flows
3. Cash flow forecasts and pro forma financial statements are preferred over the current ratio for liquidity and solvency analysis
4. Current ratio is a static measure of the ability of current assets to satisfy current liabilities

Liquidity and Working Capital

Current Ratio

Reasons for using the current ratio:

1. Understandability
2. Simplicity in computation
3. Data availability

Two important elements are integral to use of the current ratio

1. Quality of both current assets and current liabilities
2. Turnover rate of both current assets and current liabilities

Liquidity and Working Capital

Current Ratio - Applications

Comparative Analysis

Two useful tools in analyzing the trend in the current ratio

Trend analysis **-- components of working capital and the current ratio are converted to indexes and examined over time**

Common-size analysis **-- composition of current assets is examined over time**

Liquidity and Working Capital

Current Ratio - Applications

Ratio Management (window dressing)

Examples are:

- **Press the collection of receivables at year-end**
- **Call in advances to officers for temporary repayment**
- **Reduce inventory below normal levels**
- **Delay normal purchases**

Proceeds from these activities are then used to pay off current liabilities

Liquidity and Working Capital

Current Ratio - Applications

Rule of Thumb Analysis (2:1)

> 2:1 → superior coverage of current liabilities (but not too high, suggesting inefficient use of resources and reduced returns)

< 2:1 → deficient coverage of current liabilities

Liquidity and Working Capital

Current Ratio - Applications

Sales Trend Analysis

Trend *analysis* — review of sales trend across time

Liquidity and Working Capital

Cash-Based Ratio of Liquidity

Cash to Current Assets Ratio

$$\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities}}{\text{Current assets}}$$

Larger the ratio, the more liquid are current assets

Liquidity and Working Capital

Cash-Based Ratio of Liquidity

Cash to Current Liabilities Ratio

$$\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities}}{\text{Current liabilities}}$$

Larger the ratio, the more cash available to pay current obligations

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Accounts Receivable Turnover

$$\frac{\text{Net sales on credit}}{\text{Average accounts receivable}}$$

Measures the speed in converting accounts receivable to cash

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Accounts Receivable Collection Period

$$\text{Collection period} = \frac{360}{\text{Accounts receivable turnover}}$$

Measures the number of days it takes, on average, to collect accounts (and notes) receivables.

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Days' Sales in Receivables (Alternative to Collection Period)

$$\text{Ending Account Receivable} \div \frac{\text{Sales}}{360}$$

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Temporal Trend Analysis

Trend in:

1. **Collection period over time**
2. $\frac{\text{Provision for doubtful accounts}}{\text{Gross accounts receivable}}$

Operating Activity Analysis of Liquidity

Inventory Turnover

Inventory Turnover

$$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

Measures the average rate of speed inventories move through and out of a company

(a trade-off exists)

Operating Activity Analysis of Liquidity

Inventory Turnover

Days to Sell Inventory

$$\frac{360}{\text{Inventory turnover}}$$

Useful in assessing purchasing and production policies—**shows the number of days a company takes in selling *average* inventory for that year**

Alternative computation-- **Days' Sales in Inventory**

$$\frac{\text{Ending inventory}}{\text{Cost of average day's sales}}$$

where the cost of average day's sales is:

$$\frac{\text{Cost of goods sold}}{360}$$

Shows the number of days required to sell ***ending*** inventory

Operating Activity Analysis of Liquidity

Inventory Turnover - Illustration

Selected financial information from Macon Resources, Inc., for the end of Year 8 is reproduced below:

Sales	$1,800,000
Cost of goods sold	1,200,000
Beginning inventory	200,000
Ending inventory	400,000

Inventory turnover ratios using *average* inventory are computed as:

$$\textit{Inventory}\text{ turnover ratio} = \frac{\$1{,}200{,}000}{(\$200{,}000 + \$400{,}000)/2} = 4$$

$$\textit{Days}\text{ to sell inventory ratio} = \frac{360}{4} = 90 \textit{ days}$$

Inventory turnover ratios based on *ending* inventory equal:

$$\text{Cost of average day's sales} = \frac{\$1{,}200{,}000}{360} = \$3{,}333$$

$$\text{Days' sales in inventory} = \frac{\$400{,}000}{\$3{,}333} = 120 \textit{ days}$$

Operating Activity Analysis of Liquidity

Inventory Turnover

Conversion Period (Operating Cycle):

Days' to Sell Inventory + Collection Period

Measure of the speed with which inventory is converted to cash

Operating Activity Analysis of Liquidity

Liquidity of Current Liabilities

Quality of Current Liabilities

- **Must be judged on their degree of urgency in payment**
- **Must be aware of unrecorded liabilities having a claim on current funds**

Operating Activity Analysis of Liquidity

Accounts Payable Liquidity

Accounts Payable Turnover

$$\frac{\text{Purchases}}{\text{Average accounts payable}}$$

Measures the speed at which a company pays for purchases in account

Operating Activity Analysis of Liquidity

Accounts payable Liquidity

Days' Purchases in Accounts Payable

$$\text{Days' purchases in accounts payable} = \frac{\text{Accounts payable}}{\text{Purchases} \div 360}$$

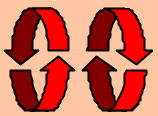
Measures the extent accounts payable represent current and not overdue obligations

(remembering that: ***Purchases = Adjusted cost of goods sold + Ending Inventory – Beginning Inventory***)

Liquidity and Working Capital

Current Ratio - Applications

Net Trade Cycle Analysis



Working capital requirements are affected by:

- its desired inventory investment and
- the relation between credit terms from suppliers and those extended to customers

Net Trade Cycle = Conversion Period (Operating Cycle) -- Days' Purchases in Accounts Payable

The longer the trade cycle, the longer is the working capital requirement

Liquidity and Working Capital

Current Ratio - Applications

Net Trade Cycle—Illustration

Selected financial information from Technology Resources, Inc., for the end of Year 1 is reproduced below:

Sales for Year 1	$360,000
Receivables	40,000
Inventories*	50,000
Accounts payable†	20,000
Cost of goods sold (including depreciation of $30,000)	320,000

*Beginning inventory is $100,000.
†We assume these relate to purchases included in cost of goods sold.

We estimate Technology Resources' purchases per day as:

Purchases per day = $240,000 ÷ 360 = $666.67

The net trade cycle for Technology Resources is computed as (in days):

$$\text{Accounts receivable} = \frac{\$40,000}{\$360,000 \div 360} = 40.00 \text{ days}$$

$$\text{Inventories} = \frac{\$50,000}{\$320,000 \div 360} = 56.24 \text{ days}$$

96.24 days

$$\text{Less: Accounts payable} = \frac{\$20,000}{\$666.67} = 30.00 \text{ days}$$

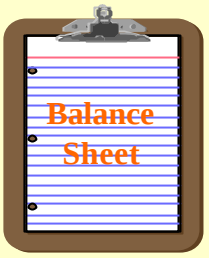
Net trade cycle (days) = 66.24 days

Additional Liquidity Measures

Asset Composition

Composition of current assets is an indicator of working capital liquidity

Use of common-size percentage comparisons facilitates this analysis



Additional Liquidity Measures

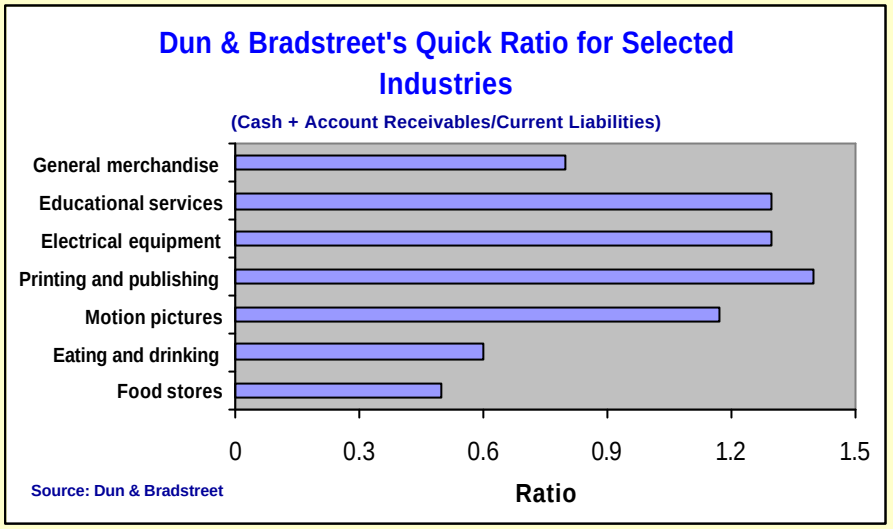
Acid-Test (Quick) Ratio

$$\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$

Is a more stringent test of liquidity vis-à-vis current ratio

Additional Liquidity Measures

Acid-Test (Quick) Ratio



Additional Liquidity Measures

Cash Flow Measures

Cash Flow Ratio

$$\frac{\text{Operating cash flow}}{\text{Current liabilities}}$$

A ratio of 0.40 or higher is common healthy companies

Additional Liquidity Measures

Financial Flexibility

Financial flexibility - ability of a company to take steps to overcome unexpected interruptions in the flow of funds

Focus of analysis:

- Ability to borrow from various sources
- To raise equity capital
- To sell and redeploy assets
- To adjust the level and direction of operations to meet changing circumstances
- Levels of prearranged financing and open lines of credit

Additional Liquidity Measures

Management's Discussion and Analysis

MD&A requires a discussion of liquidity — including

- Known trends
- Demands
- Commitments
- Uncertainties
- Ability to generate cash
- Internal and external sources of liquidity
- Any material unused sources of liquid assets

Additional Liquidity Measures

What-If Analysis

What-if analysis -- technique to trace through the effects of changes in conditions or policies on the cash resources of a company

Additional Liquidity Measures

What-If Analysis - Illustration

Background Data—Consolidated Technologies at December 31, Year 1:

Cash	$ 70,000
Accounts receivable	150,000
Inventory	65,000
Accounts payable	130,000
Notes payable	35,000
Accrued taxes	18,000
Fixed assets	200,000
Accumulated depreciation	43,000
Capital stock	200,000

The following additional information is reported for Year 1:

Sales	$750,000
Cost of sales	520,000
Purchases	350,000
Depreciation	25,000
Net income	20,000

- Anticipates 10 percent growth in sales for Year 2
- All revenue and expense items are expected to increase by 10 per cent, except for depreciation, which remains the same
- All expenses are paid in cash as they are incurred
- Year 2 ending inventory is projected at $150,000
- By the end of Year 2, predicts notes payable of $50,000 and a zero balance in accrued taxes
- Maintains a minimum cash balance of $50,000

Additional Liquidity Measures

What-If Analysis - Illustration

Case 1: Consolidated Technologies is considering a change in credit policy where ending accounts receivable reflect 90 days of sales. What impact does this change have on the company's cash balance? Will this change affect the company's need to borrow?
Our analysis of this what-if situation is as follows:

Cash, January 1, Year 2			$ 70,000
Cash collections:			
Accounts receivable, January 1, Year 2		$ 150,000	
Sales		825,000	
Total potential cash collections		$ 975,000	
Less: Accounts receivable, December 31, Year 2		(206,250)(a)	768,750
Total cash available			$ 838,750
Cash disbursements:			
Accounts payable, January 1, Year 2	$ 130,000		
Purchases	657,000*(b)*		
Total potential cash disbursements	$ 787,000		
Accounts payable, December 31, Year 2	(244,000)*(c)*	$ 543,000	
Notes payable, January 1, Year 2	$ 35,000		
Notes payable, December 31, Year 2	(50,000)	(15,000)	
Accrued taxes		18,000	
Cash expenses*(d)*		203,500	749,500
Cash, December 31, Year 2			$ 89,250
Cash balance desired			50,000
Cash excess			$ 39,250

Explanations:

(a)

(b) Year 2 cost of sales*: $520,000 × 1.1 =	$ 572,000	
Ending inventory (given)	150,000	
Goods available for sale	$ 722,000	
Beginning inventory	(65,000)	
Purchases	$ 657,000	

* Excluding depreciation.

(c)

(d) Gross profit ($825,000 – $572,000)		$ 253,000
Less: Net income	$ 24,500*	
Depreciation	25,000	(49,500)
Other cash expenses		$ 203,500

*110 percent of $20,000 (Year 1 N.I.) + 10 percent of $ 25,000 (Year 1 depreciation).