Advanced Accounting
AY 2022/2023

Lesson 7
Liquidity and Working Capital

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Liquidity and Working Capital

- **Liquidity** - Ability to convert assets into cash or to obtain cash to meet short-term obligations.
  - Short-term - Conventionally viewed as a period up to one year.
  - Normal operating cycle of a company.

Lack of liquidity can limit:	Severe illiquidity often precedes:
Advantages of discounts	Lower profitability
Profitable opportunities	Restricted opportunities
Management actions	Loss of owner control
Coverage of current obligations	Loss of capital investment
	Insolvency and bankruptcy

Liquidity and Working Capital

Working Capital = the excess of operating current assets over current operating liabilities

CURRENT ASSETS	CURRENT LIABILITIES
Cash and other assets reasonably expected to be:	Obligations to be
(1) realized in cash or (2) sold or consumed during the longer of one-year or the operating cycle	satisfied within a relatively short period, usually a year.
• Cash • Marketable securities maturing within the next fiscal year • Accounts receivable • Inventories • Prepaid expenses	• Accounts payable • Notes payable • Short-term bank loans • Taxes payable • Accrued expenses • Current portion of long-term debt

Liquidity and Working Capital

Current Ratio

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

- The current ratio measures the ability to pay current liabilities with current assets.

Relevance of the Current Ratio

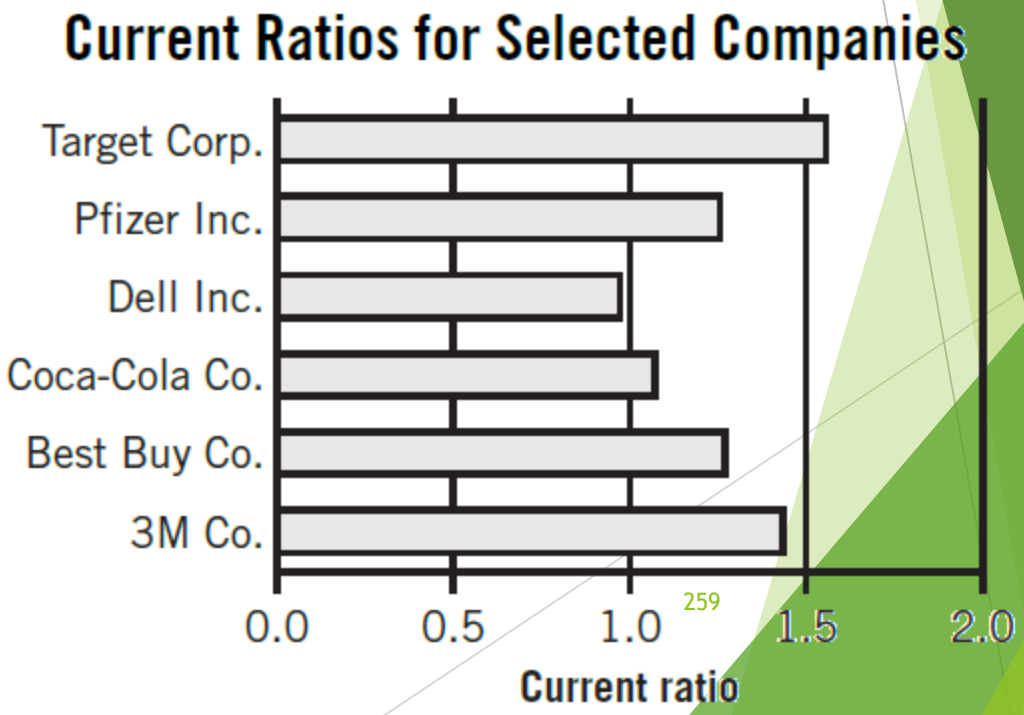
1) Current liability coverage
2) Buffer
3) Reserve of liquid funds

Limitation of the Current Ratio

1) Static measure

Liquidity and Working Capital

- There is not an "ideal" current ratio for all businesses: different types of business require different current ratios.
- The higher the ratio, the more liquid the business is considered to be.
- What if the ratio is very high?
- This ratio should not be smaller than 1.



Liquidity and Working Capital

- Numerator Considerations
  - Adjustments needed to counter limitations such as:
    - Failure to reflect open lines of credit
    - Adjust securities' valuation since the balance sheet date
    - Reflect revolving nature of accounts receivable
    - Recognize profit margin in inventory
    - Adjust inventory values to market
    - Remove deferred charges of dubious liquidity from prepaid expenses
- Denominator Considerations
  - Payables vary with sales.
  - Current liabilities do not include prospective cash outlays.

Liquidity and Working Capital

Using the Current Ratio for Analysis

The relevant use of the current ratio is:

1. to measure the ability of current assets to discharge current liabilities;
2. to measure the excess of current assets as a liquid surplus available to meet imbalances in the flow of funds and other contingencies.

- Two elements integral to the use of current ratio:
  - Quality of both current assets and current liabilities.
  - Turnover rate of both current assets and current liabilities.

Liquidity and Working Capital

Using the Current Ratio for Analysis

1. Liquidity depends to a large extent on prospective cash flows and to a lesser extent on the level of cash and cash equivalents.
2. No direct relation between balances of working capital accounts and likely patterns of future cash flows.
3. Managerial policies regarding receivables and inventories are directed primarily at efficient and profitable asset utilization and secondarily at liquidity.

Liquidity and Working Capital

Current Ratio: Applications

1. **Trend Analysis**

- Toward the close of a period, management will occasionally press the collection of receivables, reduce inventory below normal levels, and delay normal purchases.
- Proceeds from these activities are then used to pay off current liabilities.

Technology Resources, Inc., experiences a doubling of current assets and a quadrupling of current liabilities with *no change* in its working capital. This yielded a prosperity squeeze evidenced by a 50% decline in the current ratio.

	Year 1	Year 2
Current assets	$300,000	$600,000
Current liabilities	(100,000)	(400,000)
Working capital	$200,000	$200,000
Current ratio	3:1	1.5:1

Liquidity and Working Capital

Current Ratio: Applications

2. **Ratio Management**

- It is also called 'window dressing'.
- Changes in the current ratio over time must be interpreted with caution.
- Changes in this ratio do not necessarily imply changes in liquidity or operating performance.
- The effect of these activities is to increase the current ratio.

Technology Resources, Inc., increases its current ratio by making an earlier-than-normal payoff of $50,000 of current liabilities:

	Before Payoff	After Payoff
Current assets	$ 200,000	$150,000
Current liabilities.....	(100,000)	(50,000)
Working capital.....	$ 100,000	$100,000
Current ratio	2:1	3:1

Liquidity and Working Capital

Current Ratio: Applications

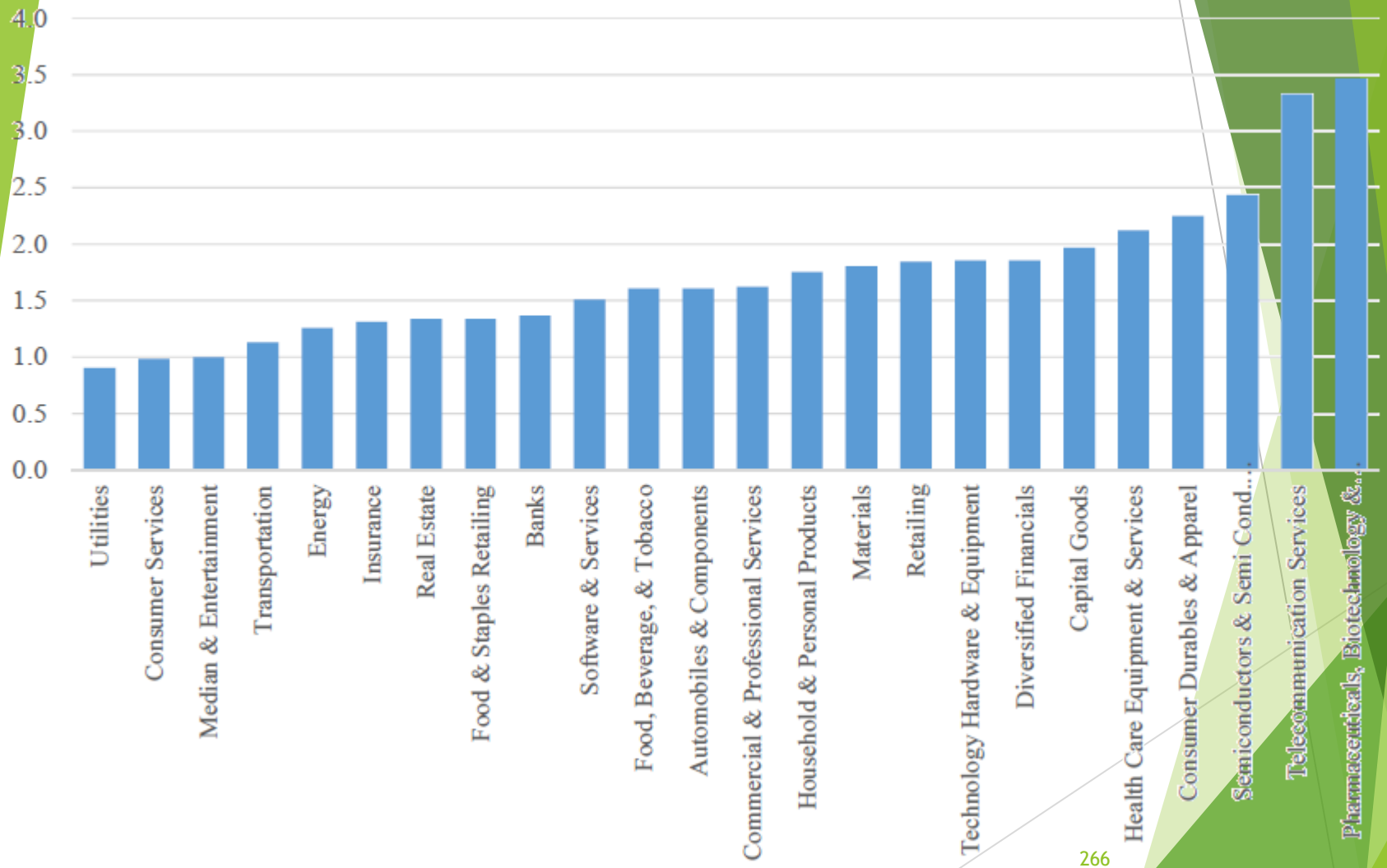
3. Rule of Thumb Analysis

- Current ratio above 2:1 - superior coverage of current liabilities (but not too high - inefficient resource use and reduced returns).
- Current ratio below 2:1 - deficient coverage of current liabilities.

Limitations

- Quality of current assets and the composition of current liabilities are more important in evaluating the current ratio.
- Working capital requirements vary with industry conditions and the length of a company's net trade cycle.

Median Current Ratio by Group



Sorted from low (left) to high (right). This figure shows the median for each GICS Group based on 180,588 observations based on the fiscal years 1986 to 2018 fiscal years. All variables have been winsorized at the 1/99 percentile.

Liquidity and Working Capital

Other Liquidity Ratios

- Liquidity ratios examine the relationship between liquid resources held and liabilities due for payment in the near future.
- It is vital to the survival of the business that there are sufficient liquid resources available to meet maturing obligations.
- Liquidity ratios are concerned with the ability of the business to meet its short-term financial obligations.
- All liquidity ratios compare short term assets with short term liabilities (e.g. current ratio = current assets / current liabilites).

Liquidity and Working Capital

Other Liquidity Ratios

- Acid-test ratio

$$\frac{\text{Current assets (excl. Inventories)}}{\text{Current liabilities}}$$

- It is also known as 'quick ratio' because it's an immediate test of the company's liquidity.
- It is similar to the current ratio but it represents a more stringent test of liquidity.
- The acid test tells whether the company could pay all its current liabilities if they came due immediately.
- The ratio excludes stocks because they are the least-liquid current assets and because their evaluation involves more managerial discretion than other current assets require.

Liquidity and Working Capital

Other Liquidity Ratios

- Cash ratio

$$\frac{\text{Cash and cash equivalents}}{\text{Current liabilities}}$$

- This ratio measures the cash available to pay current obligations.
- Larger the ratio, the more cash available to pay current obligations.
- Severe test of short-term liquidity.

Liquidity and Working Capital

Other Liquidity Ratios

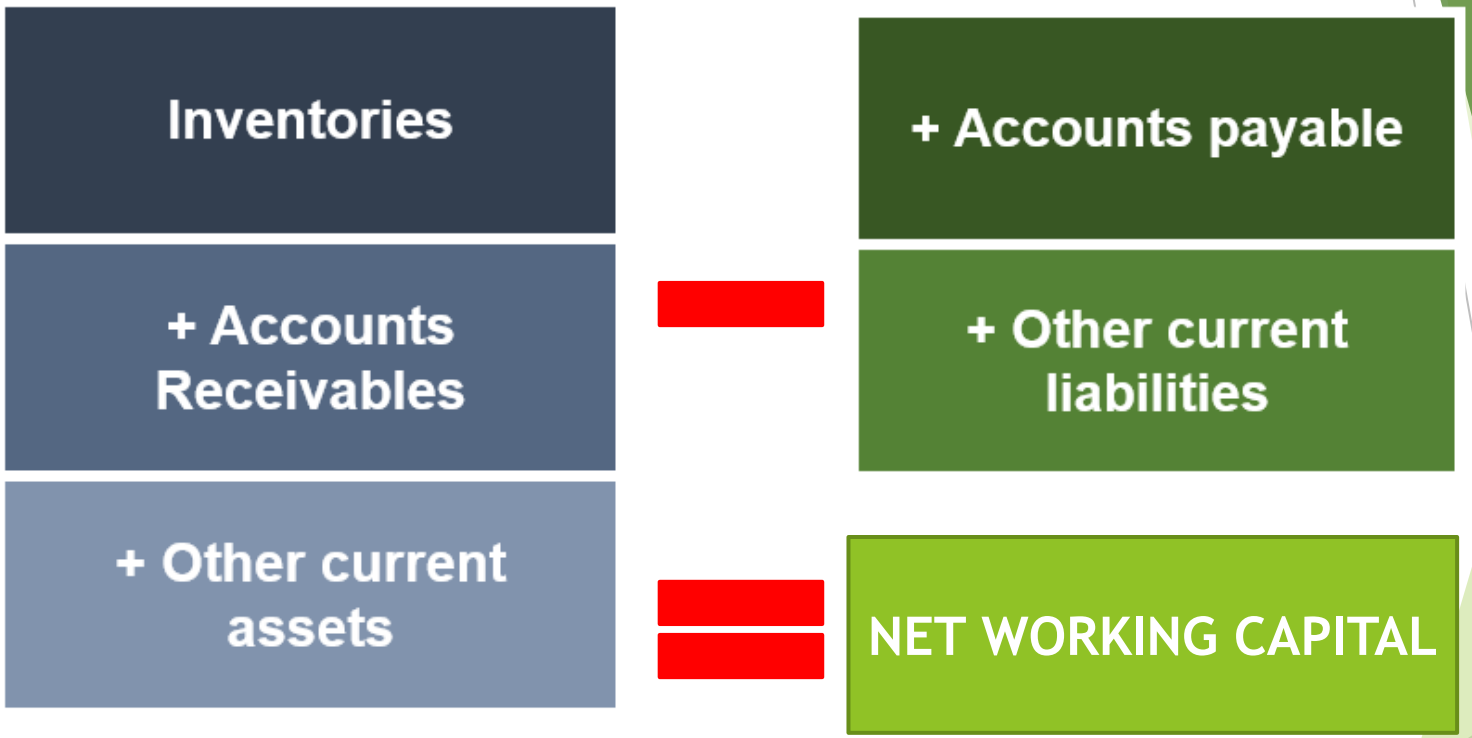
- An acid test ratio less than 1 (or 1:1) means that the firm can possibly have some problems in paying back its short-term debt.
- However, it is just a signal, that should be read together with the operating cash flow. The balance sheet in fact does not provide any information about the cash inflows and outflows, but it only shows the balances at the end of the year.
- The cash ratio is usually very low. Greater levels could be encountered in firms that hold unusually large quantities of cash.

Liquidity and Working Capital

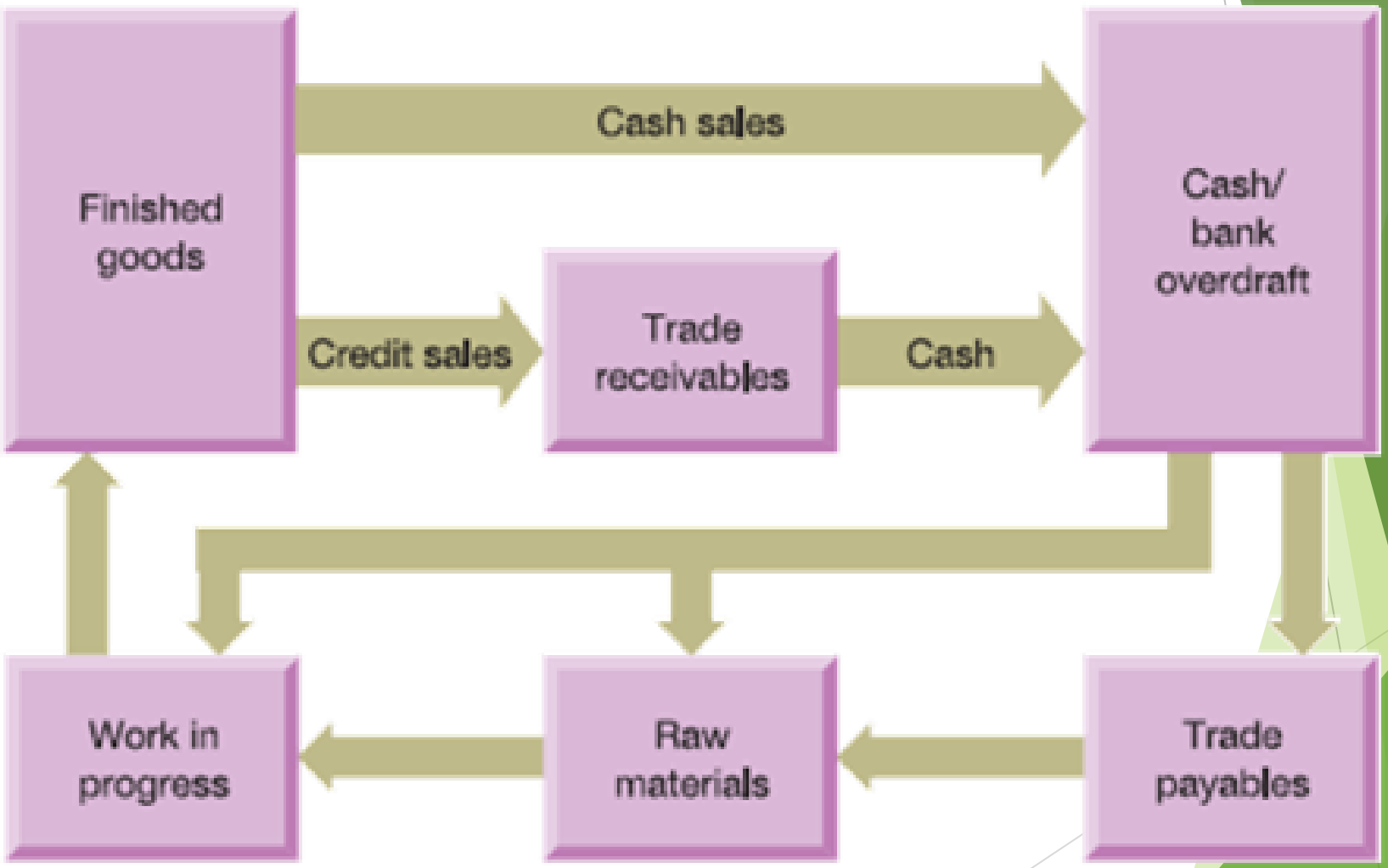
Other Liquidity Ratios

- When a firm holds inventories of products or materials, the current ratio is not as helpful as the acid test ratio. In fact, inventories are non-financial assets, and they cannot be used for settling a liability. For this reason, the acid test ratio is most widely employed when assessing a firm's liquidity.

Liquidity and Working Capital



The working capital cycle



Managing working capital

- Operating activity measures based on account receivable, inventory and current liabilities are important in credit analysis.
- It is part of short-term planning process.
- There are cost associated with holding either too much or too little of working capital.
- These costs include opportunity costs.
- The working capital needs of a business change over time.

Managing working capital

What kinds of changes in the commercial environment might lead to a decision to change the level of investment in working capital? Try to identify four possible changes that could affect the working capital needs of a business.

These may include the following:

- changes in interest rates
- changes in market demand
- changes in the seasons
- changes in the state of the economy.

Managing receivables

When a business offers to sell its goods or services on credit, it must have clear policies concerning:

- ✓ which customers should receive credit;
- ✓ how much credit should be offered;
- ✓ what length of credit it is prepared to offer;
- ✓ whether discounts will be offered for prompt payment;
- ✓ what collection policies should be adopted;
- ✓ how the risk of non-payment can be reduced.

Managing receivables

The costs of allowing credit include:

- lost interest (using funds for more profitable purposes);
- lost purchasing power;
- costs of assessing customer creditworthiness;
- administration cost
- bad debts cost
- cash discounts (from prompt payments).

But allowing credit also represents an opportunity: for customers to delay payments and for the company not to loose customers' goodwill.

Managing receivables

Length of credit period

- the typical credit terms operating within the industry;
- the degree of competition within the industry;
- the bargaining power of particular customers;
- the risk of non-payment;
- the capacity of the business to offer credit;
- the marketing strategy of the business.

Monitor outstanding debts

Management can monitor the effectiveness of collection policies in a number of ways.

One method is to calculate the average settlement period for trade receivables ratio.

Managing receivables

Torrance Ltd produces a new type of golf putter. The business sells the putter to wholesalers and retailers and has an annual turnover of £600,000. The following data relate to each putter produced.

	£	£
Selling price		40
Variable costs	20	
Fixed cost apportionment	6	26
Profit		14

The business's cost of capital is estimated at 10 per cent a year.

Torrance Ltd wishes to expand the sales volume of the new putter. It believes that offering a longer credit period can achieve this. The business's average receivables collection period is currently 30 days. It is considering three options in an attempt to increase sales revenue. These are as follows:

Managing receivables

	Option		
	1	*2*	*3*
Increase in average collection period (days)	10	20	30
Increase in sales revenue (£)	30,000	45,000	50,000

To enable the business to decide on the best option to adopt, it must weigh the benefits of the options against their respective costs. The benefits arising will be represented by the increase in profit from the sale of additional putters. From the cost data supplied we can see that the contribution (that is, selling price (£40) less variable costs (£20)) is £20 a putter, that is, 50 per cent of the selling price. So, whatever increase there may be in sales revenue, the additional contributions will be half of that figure. The fixed costs can be ignored in our calculations, as they will remain the same whichever option is chosen.

Managing receivables

The increase in contribution under each option will therefore be:

	Option		
	1	*2*	*3*
50% of the increase in sales revenue (£)	15,000	22,500	25,000

The increase in trade receivables under each option will be as follows:

	Option		
	1	*2*	*3*
	£	£	£
Projected level of trade receivables			
40 × £630,000/365 (Note 1)	69,041		
50 × £645,000/365		88,356	
60 × £650,000/365			106,849
Current level of trade receivables			
30 × £600,000/365	(49,315)	(49,315)	(49,315)
Increase in trade receivables	19,726	39,041	57,534

Managing receivables

The increase in receivables that results from each option will mean an additional finance cost to the business.

The net increase in the business's profit arising from the projected change is:

	Option		
	1	*2*	*3*
	£	£	£
Increase in contribution (see above)	15,000	22,500	25,000
Increase in finance cost (Note 2)	(1,973)	(3,904)	(5,753)
Net increase in profits	13,027	18,596	19,247

The calculations show that Option 3 will be the most profitable one.

Managing receivables

Notes:

1 If the annual sales revenue total £630,000 and 40 days' credit are allowed (both of which will apply under Option 1), the average amount that will be owed to the business by its customers, at any point during the year, will be the daily sales revenue (that is, £630,000/365) multiplied by the number of days that the customers take to pay (that is 40).
Exactly the same logic applies to Options 2 and 3 and to the current level of trade receivables.

2 The increase in the finance cost for Option 1 will be the increase in trade receivables (£19,726) × 10 per cent. The equivalent figures for the other options are derived in a similar way.

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity Measures

- **Accounts Receivable Turnover**

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

- ✓ Indicates how often, on average, receivables revolve—that is, are received and collected during the year.
- ✓ Since financial statements rarely separately disclose cash and credit sales, our analysis often must compute this ratio using total net sales (that is, assuming cash sales are insignificant).
- ✓ The most direct way for us to determine average accounts receivable is to add beginning and ending accounts receivable for the period and divide by two.
- ✓ The more that sales fluctuate, the more likely this ratio is distorted.

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity Measures

- **Days' Sales in Receivables**

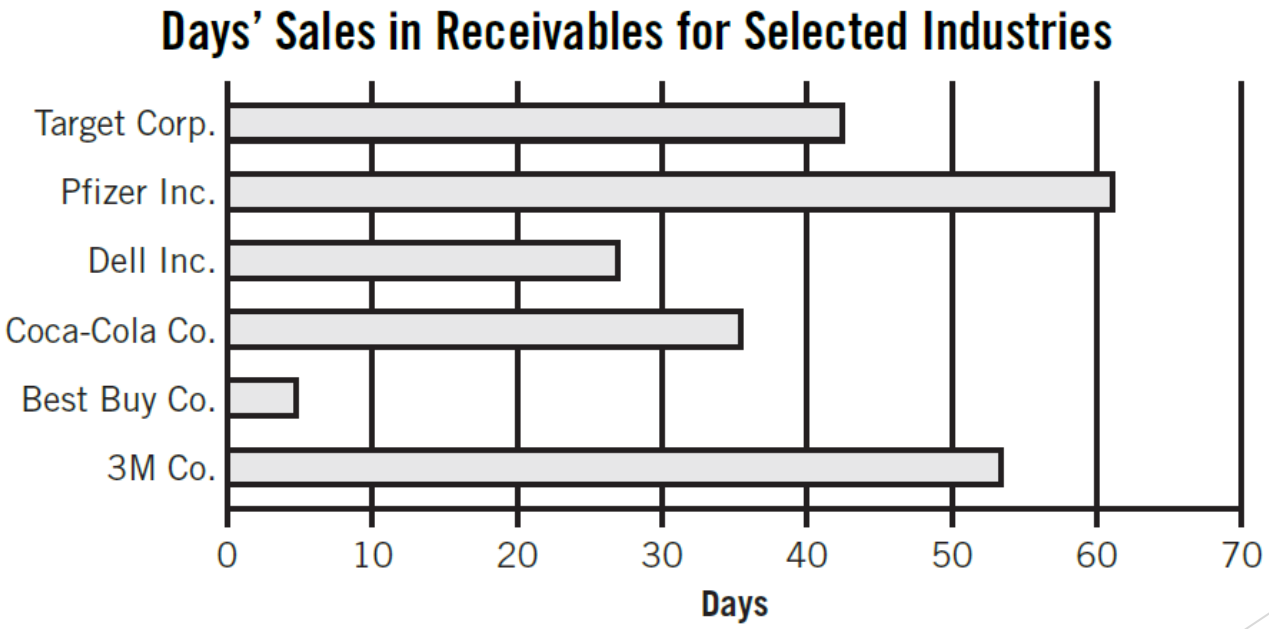
$$\text{Days' sales in receivables} = \text{Accounts receivable} \div \frac{\text{Sales}}{360}$$

- ✓ It measures the number of days it takes, on average, to collect accounts receivable based on the year-end balance in accounts receivable.
- ✓ It measures the ability of the company to collect receivables.
- ✓ It tells us how many days sales remain in accounts receivable.

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity Measures

- **Days' Sales in Receivables**



Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity Measures

- **Days' Sales in Receivables**

✓ It is also called 'days of sales outstanding' (DSO) and expressed as follow:

- **Days of Sales Outstanding (DSO)**

$$\frac{\text{Accounts receivable}}{\text{Sales revenue}} \times 365$$

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity Measures

- **Receivables collection period**

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

- ✓ It measures the number of days it takes, on average, to collect accounts receivable based on the average balance in accounts receivable.
- ✓ It is computed by dividing the accounts receivable turnover ratio into 360 days (an approximate number of days in a year).

Operating Activity Analysis of Liquidity

Interpretation of Receivables Liquidity Measures

- ✓ Accounts receivable turnover rates and collection periods are usefully compared with industry averages or with credit terms.
- ✓ When the collection period is compared with the terms of sale allowed by the company, we can assess the extent of customers paying on time.
- ✓ A business will usually be concerned with amount of funds tied up in trade receivables and try to keep it to a minimum.
- ✓ The speed of payment can have a significant effect on the business's cash flow.

Operating Activity Analysis of Liquidity

Interpretation of Receivables Liquidity Measures

- ✓ The DSO calculates how long, on average, credit customers take to pay the amount that they owe to the business.
- ✓ A business will normally prefer a shorter period to a longer one because funds tied up may be used for more profitable purposes.
- ✓ This ratio could be badly distorted by a few large customers who are very slow or very fast payers.

Managing inventories

When judging the amount of inventories to carry, what will you consider?

The business must consider such things as:
1) the likely demand for the inventories;
2) the possibility of supply shortages;
3) the likelihood of price rises;
4) the amount of storage space available and the related costs;
5) the perishability of the inventories;
6) the susceptibility to obsolescence of the inventories.

Managing inventories

There are significant costs associated with holding inventories such as:

- Storage, handling and insurance costs
- Financing costs
- The costs of pilferage and obsolescence
- The cost of opportunities forgone in tying up funds in this form of asset.

But if the level of inventories held is too low, there will also be associated costs.

Managing inventories

What costs might a business incur as a result of holding too low a level of inventories?

- ✓ loss of sales, from being unable to provide the goods required immediately;
- ✓ loss of customer goodwill, for being unable to satisfy customer demand;
- ✓ high transport costs incurred to ensure that inventories are replenished quickly;
- ✓ lost production due to shortage of raw materials;
- ✓ inefficient production scheduling due to shortages of raw materials;
- ✓ purchasing inventories at a higher price than might otherwise have been possible to replenish inventories quickly.

Managing inventories

Pallets lost at Brambles

Brambles Industries plc (BI) is an Anglo-Australian industrial services business, formed in 2001 when the industrial services subsidiary of GKN plc, the UK engineering business, was merged with the Australian business Brambles Ltd.

BI uses 'pallets' on which it delivers its products to customers. These are returnable by customers so BI holds a 'pool' of pallets. Each pallet costs the business about £10. Unfortunately, BI lost 14 million pallets during the year ended in June 2002 as a result of poor control and this led to a significant decline in the business's profits and share price.

At BI's annual general meeting in Sydney, Australia, one of the shareholders was quoted as saying: 'Running a pallet pool is not rocket science. I can teach one of my employees about pallets in 20 minutes.'

Source: The Financial Times, 27 November 2002.

Managing inventories

To try to ensure that the inventories are properly managed, a number of procedures and techniques may be used:

- ✓ budgeting future demand
- ✓ analyzing ratios (e.g. average inventories turnover

$$\text{Average inventories turnover period} = \frac{\text{Average inventories held}}{\text{Cost of sales}} \times 365$$

- ✓ recording and reordering systems
- ✓ maintaining a buffer stock (or safety inventories level)
- ✓ using levels of control and inventories' management models.

Managing inventories

An electrical retailer stocks a particular type of light switch. The annual demand for the light switch is 10,400 units, and the **lead time** for orders is four weeks. Demand for the light switch is steady throughout the year. At what quantity of the light switch should the business reorder, assuming that it is confident of the information given above?

The average weekly demand for the switch is 10,400/52 = 200 units. During the time between ordering new switches and receiving them, the quantity sold will be 4 × 200 units = 800 units.

So the business should reorder no later than when the level held reaches 800 units, in order to avoid running out of inventories.

Managing inventories

Assuming the same facts of the previous slide… we are also told that the business maintains buffer inventories of 300 units. At what level should the business reorder?

Reorder point =
expected level of demand during the lead time
plus the level of buffer inventories
= 800 + 300
= 1,100 units

Operating Activity Analysis of Liquidity

Inventory Turnover Measures

- **Inventory turnover ratio**

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

- ✓ It measures the average rate of speed at which inventories move through and out of a company and expresses the number of times a company sell or use its average level of inventory during a year (or a different period).
- ✓ When interested in the ***level*** of inventory at a specific date, such as year-end, compute the inventory turnover ratio using the inventory balance at that date in the denominator.
- ✓ If the cost of goods sold is not available, often sales revenues are used (i.e. Continental approach).
- ✓ It is possible to use the closing amount if the average is not available.

Operating Activity Analysis of Liquidity

Inventory Turnover Measures

- **Days' Sales in Inventory**

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

- ✓ It tells the number of days required to sell ***ending*** inventory assuming a given rate of sales.
- ✓ Useful in assessing a company's purchasing and production policy.

- **Days to sell inventory ratio**

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

- ✓ It tells the number of days a company takes in selling ***average*** inventory for that year.

Operating Activity Analysis of Liquidity

Inventory Turnover Measures

- **Example**

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

$$\text{Days' sales in inventory} = \frac{\$400{,}000}{\$1{,}200{,}000/360} = 120 \text{ days}$$

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

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

Operating Activity Analysis of Liquidity

Inventory Turnover Measures

- **Days in inventory for products**

$$\frac{360 \text{ days}}{\text{Average FP turnover ratio}}$$

- **Days in inventory for materials**

$$\frac{360 \text{ days}}{\text{Average materials turnover ratio}}$$

- It is possible to determine the days in inventory ratios as well.

Operating Activity Analysis of Liquidity

Interpretation of Inventory Turnover

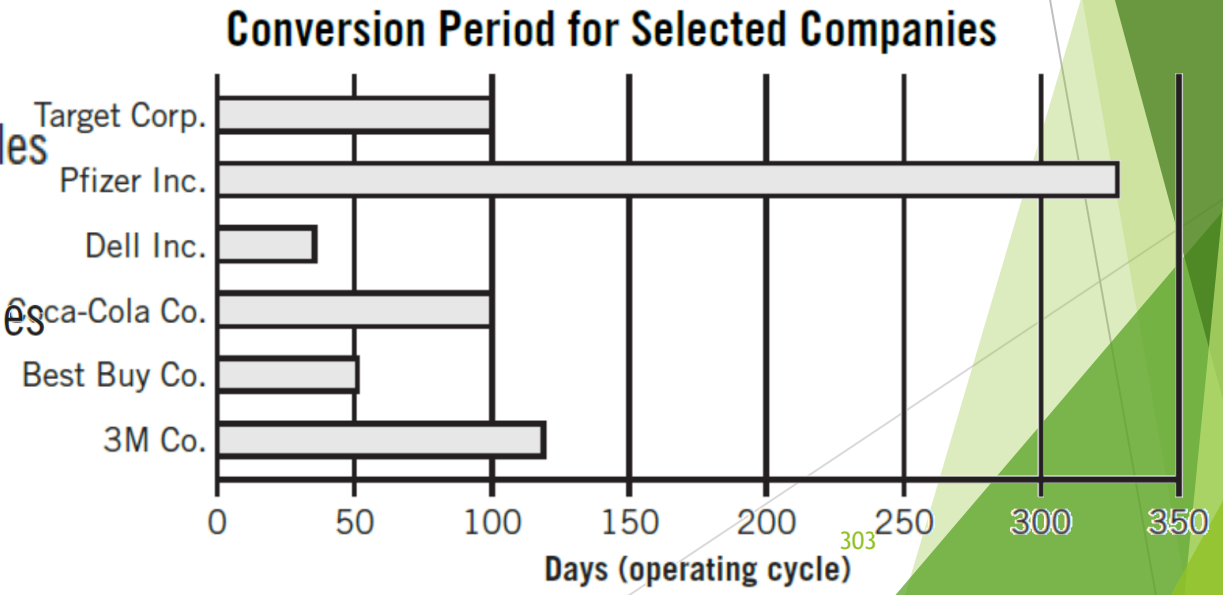
- ✓ Quality of inventory: refers to a company's ability to use and dispose of inventory.
- ✓ Decreasing inventory turnover over time
  - Analyze if decrease is due to inventory buildup in anticipation of sales increases, contractual commitments, increasing prices, work stoppages, inventory shortages, or other legitimate reason.
- ✓ Inventory management
  - Effective inventory management increases inventory turnover.

Operating Activity Analysis of Liquidity

Interpretation of Inventory Turnover

- ✓ **Conversion period**
  - Measure of the speed with which inventory is converted to cash.
  - It combines the collection period of receivables with the days to sell inventories.

Days' sales in receivables
+
Days' sales in inventories
=
Conversion period



Managing trade payables

- Trade payables are the other side of the coin from trade receivables.
- Trade payables are an important source of finance for most businesses.
- Trade credit is widely regarded as a ‘free’ source of finance and, therefore, a good thing for a business to use.
- There may be real costs, however, associated with taking trade credit.

Managing trade payables

The costs of taking credit include:

- higher price than purchases for immediate cash settlement;
- administrative costs;
- restrictions imposed by seller.

The costs of not taking credit include:

- lost interest-free borrowing
- lost purchasing power
- inconvenience – paying at the time of purchase can be inconvenient.

Managing trade payables

Controlling trade payables
To help monitor the level of trade credit taken, management can calculate the average settlement period for trade payables.

- **Days of Payables Outstanding**

$$\frac{\text{Accounts payable}}{\text{«Cash» expenses}} \times 365$$

Managing trade payables

Can't pay, won't pay

Kmart, a large US retailer, suffered a cash crisis during 2001. The crisis was largely as a result of one manager ordering $850m worth of inventories, which was later described in an internal report as 'excessive'.

To conserve cash, the business implemented Project Slow It Down. This involved systematically delaying or reducing payments to trade payables. The project also involved denying suppliers access to records of the amounts owed by Kmart and giving false reasons as to why they had not been paid on time.

Source: The Financial Times, 29 January 2003

Operating Activity Analysis of Liquidity

Liquidity of Current Liabilities

- ✓ Current liabilities are important in computing working capital and current ratio:
  - Used in determining whether sufficient margin of safety exists.
  - Deducted from current assets in arriving at working capital.

- ✓ 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

Days' Purchases in Accounts Payable

$$\text{Average payable days outstanding} = \frac{\text{Accounts payable}}{\text{Cost of goods sold} \div 360}$$

- ✓ Indicates the average time the company takes in paying its obligations to suppliers.
- ✓ The longer the payment period, the greater the use of suppliers' capital.

Purchases can be substituted for cost of goods sold in this formula

Operating Activity Analysis of Liquidity

Accounts payable turnover

$$\frac{Cost\ of\ goods\ sold}{Average\ accounts\ payable}$$

- ✓ Indicates the speed at which a company pays for purchases on account.