

# Working Capital Management

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# Working Capital Concepts

## Net Working Capital

Current Assets - Current Liabilities.

## Gross Working Capital

The firm's investment in current assets.

## Working Capital Management

The administration of the firm's current assets and the financing needed to support current assets.



# Significance of WCM

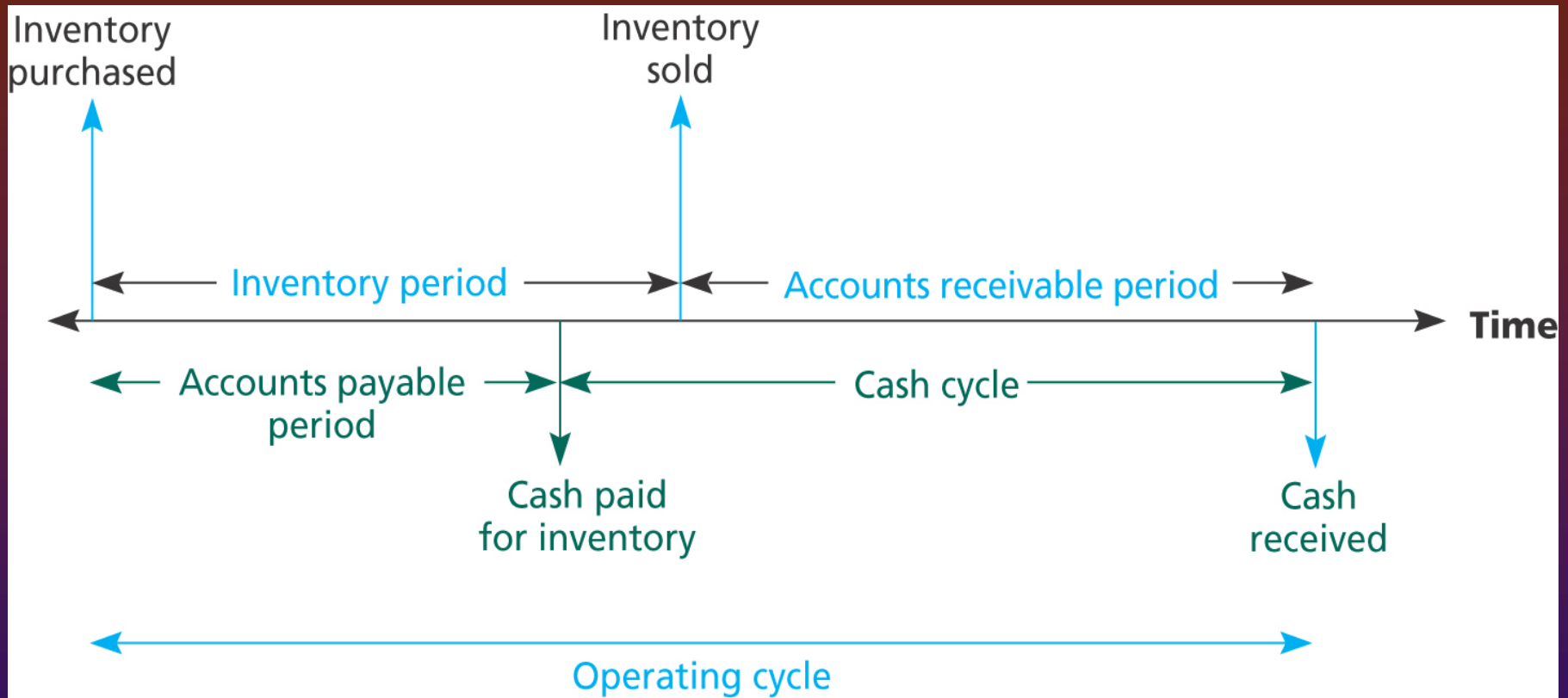
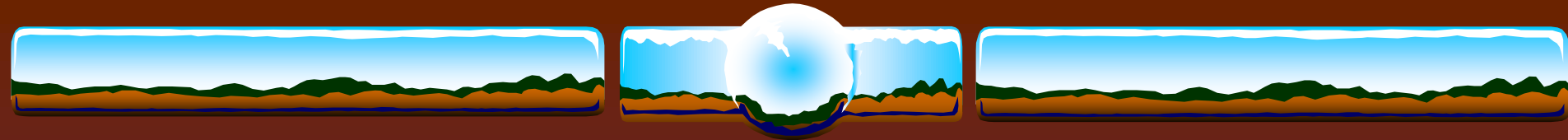
- ❖ In a typical manufacturing firm, current assets constitute \_\_\_\_\_% of total assets.
- ❖ Excessive levels can result in \_\_\_\_\_
- ❖ CL are the principal source of external financing for CA
- ❖ Requires continuous, day-to-day managerial supervision
- ❖ In other words, WCM affects the company's financial performance
- ❖ WCM constitutes: Cash Management, Receivables Management, Inventory Management, and Short-term Financing

Managers Who Deal with Short-Term Financial Problems

**TABLE 19.1**

Title of Manager	Duties Related to Short-Term Financial Management	Assets/Liabilities Influenced
Cash manager	Collection, concentration, disbursement; short-term investments; short-term borrowing; banking relations	Cash, marketable securities, short-term loans
Credit manager	Monitoring and control of accounts receivable; credit policy decisions	Accounts receivable
Marketing manager	Credit policy decisions	Accounts receivable
Purchasing manager	Decisions on purchases, suppliers; may negotiate payment terms	Inventory, accounts payable
Production manager	Setting of production schedules and materials requirements	Inventory, accounts payable
Payables manager	Decisions on payment policies and on whether to take discounts	Accounts payable
Controller	Accounting information on cash flows; reconciliation of accounts payable; application of payments to accounts receivable	Accounts receivable, accounts payable

Source: N. C. Hill and W. L. Sartoris, *Short-Term Financial Management*, 2d ed. (New York: Macmillan, 1992), p.15.



The operating cycle is the time period from inventory purchase until the receipt of cash. (The operating cycle may not include the time from placement of the order until arrival of the stock.) The cash cycle is the time period from when cash is paid out to when cash is received.

# Operating Cycle & Cash Cycle

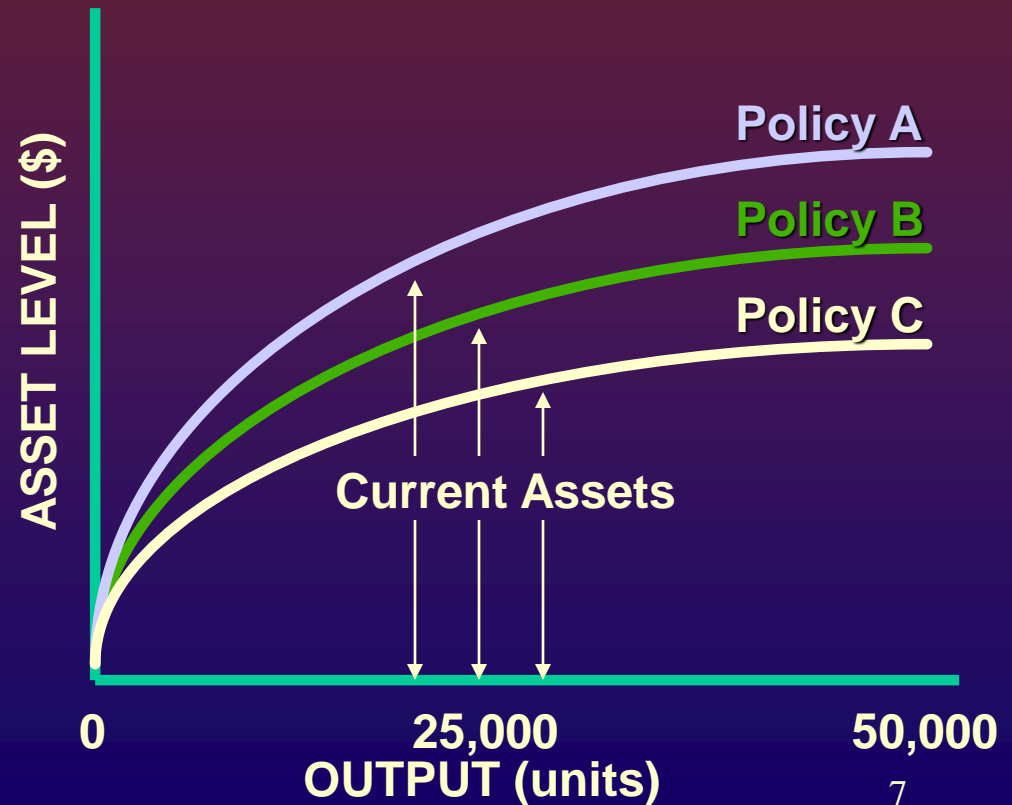
- ❖ Operating cycle – time between purchasing the inventory and collecting the cash
- ❖ ICP – time required to purchase and sell the inventory
- ❖ ACP – time to collect on credit sales
- ❖  $OC = \text{inventory period} + \text{accounts receivable period}$
- ❖ Cash cycle – time period for which we need to finance our inventory
- ❖ APP – time between purchase of inventory and payment for the inventory
- ❖  $\text{Cash cycle} = \text{Operating cycle} - \text{accounts payable period}$

# Working Capital Issues

Optimal Amount (Level) of Current Assets

## Assumptions

- ❖ 50,000 maximum units of production
- ❖ Continuous production
- ❖ Three different policies for current asset levels are possible



## Liquidity Analysis

Policy                      Liquidity

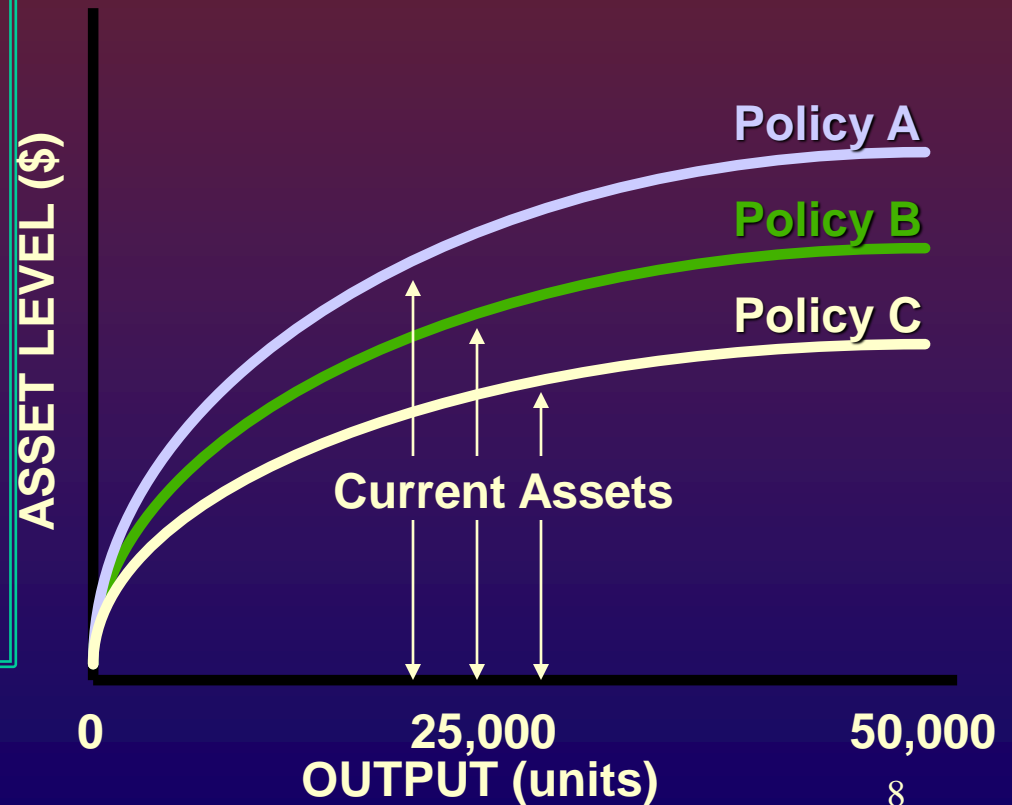
A                              High

B                              Average

C                              Low

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Greater current asset levels generate more liquidity; all other factors held constant.





## Profitability Analysis

Policy                      Profitability

A                              Low

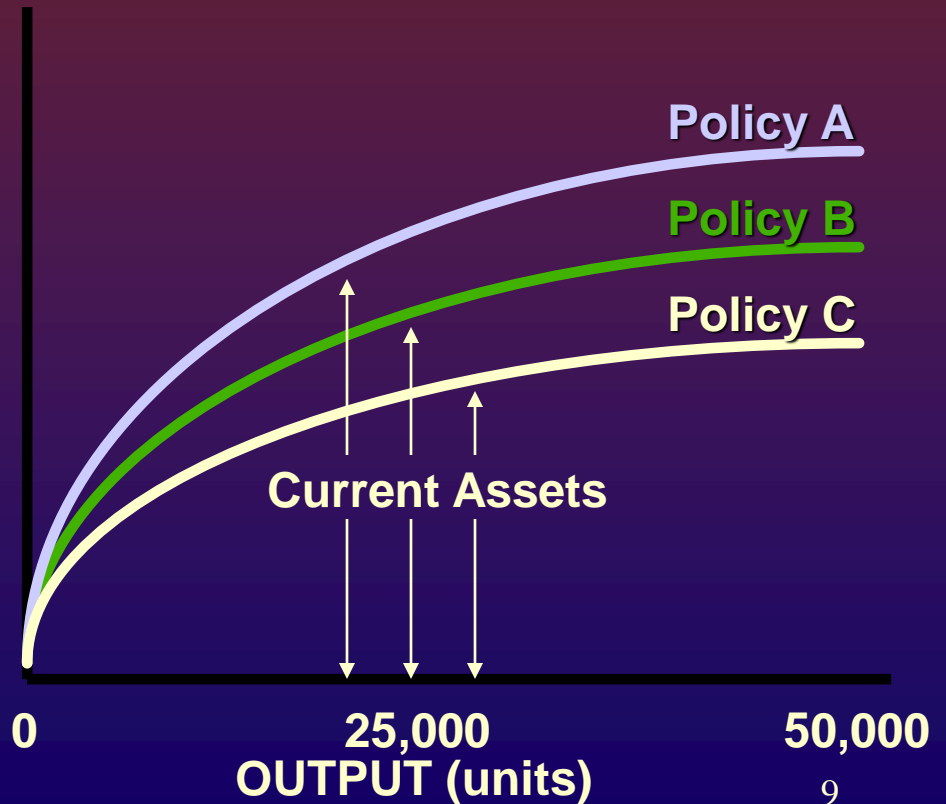
B                              **Average**

C                              High

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As current asset levels decline, total assets will decline and the ROA will rise.

ASSET LEVEL (\$)



## Risk Analysis

Policy

Risk

A

Low

B

Average

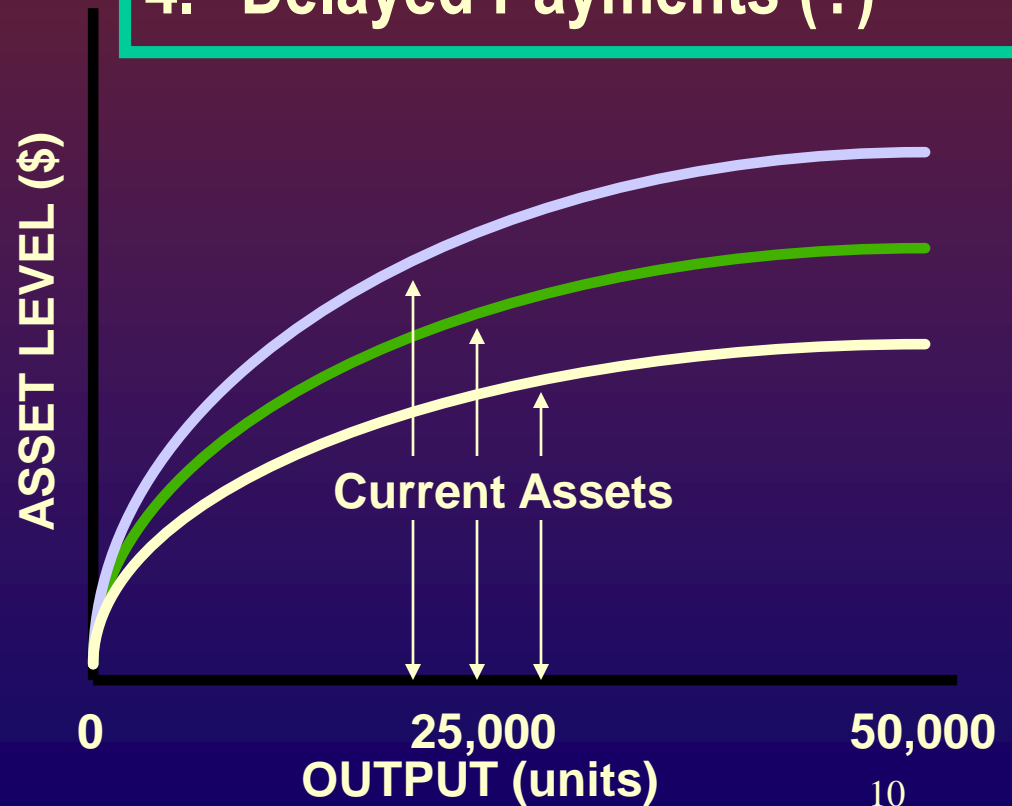
C

High

Risk increases as the level of current assets are reduced.

## Factors:

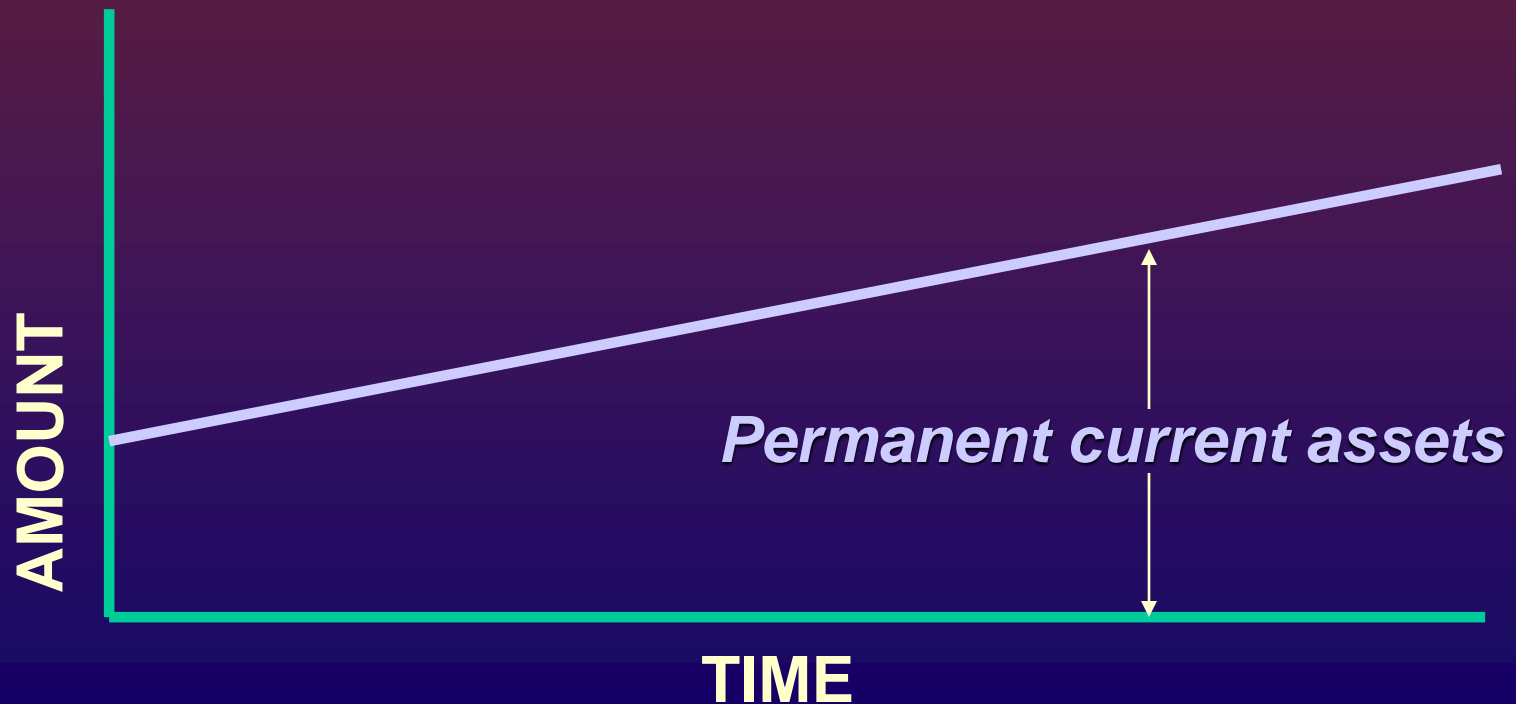
1. Decreasing Cash →
2. Stricter Credit Norms →
3. Lower Inventory →
4. Delayed Payments (?)





# Permanent Working Capital

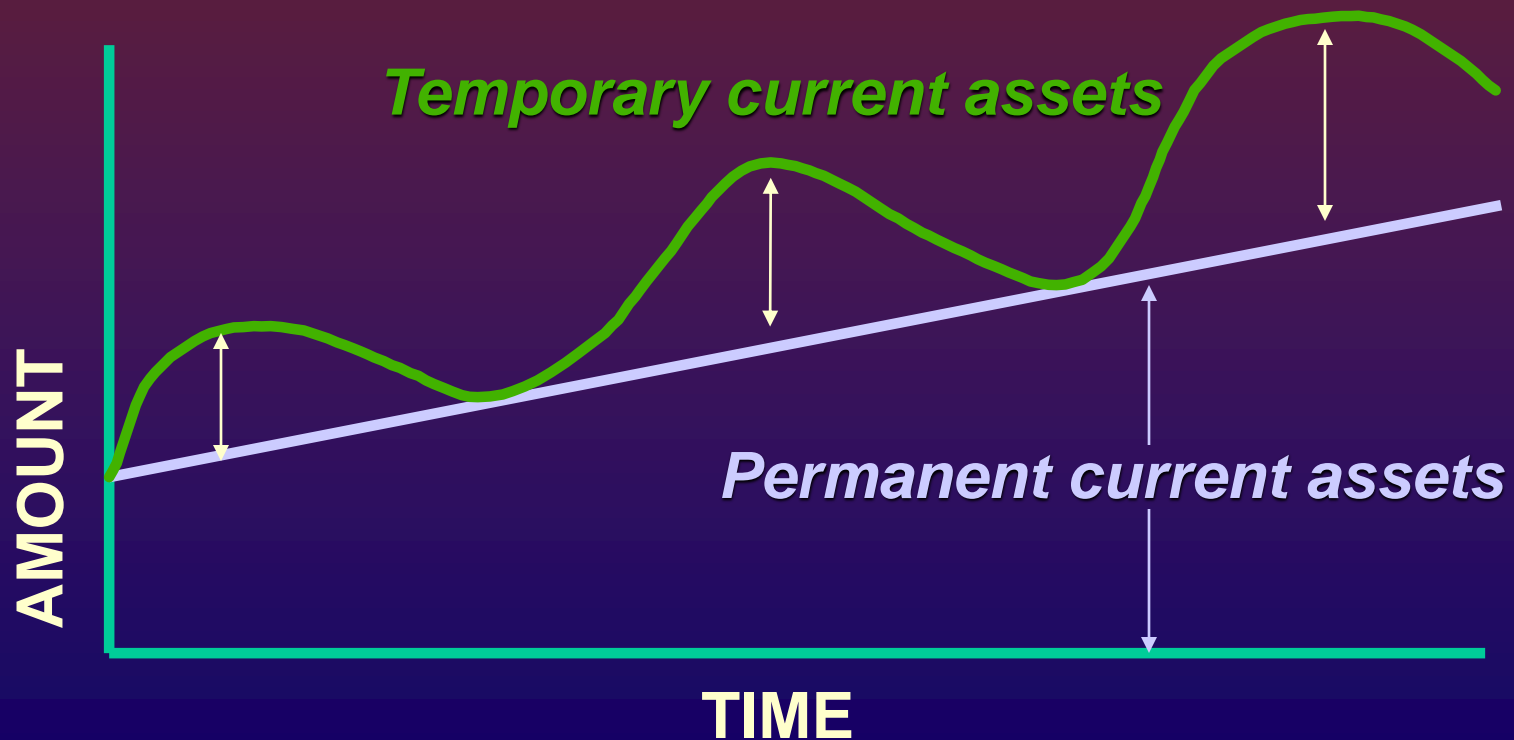
The amount of current assets required to meet a firm's long-term minimum needs.





# Temporary Working Capital

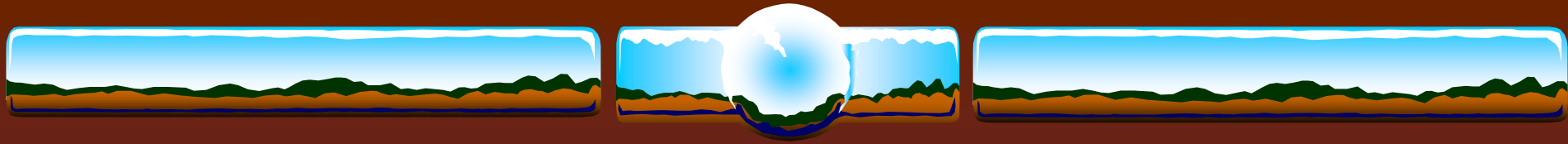
The amount of current assets that varies with seasonal requirements.



# Financing Current Assets: Short-Term and Long-Term Mix

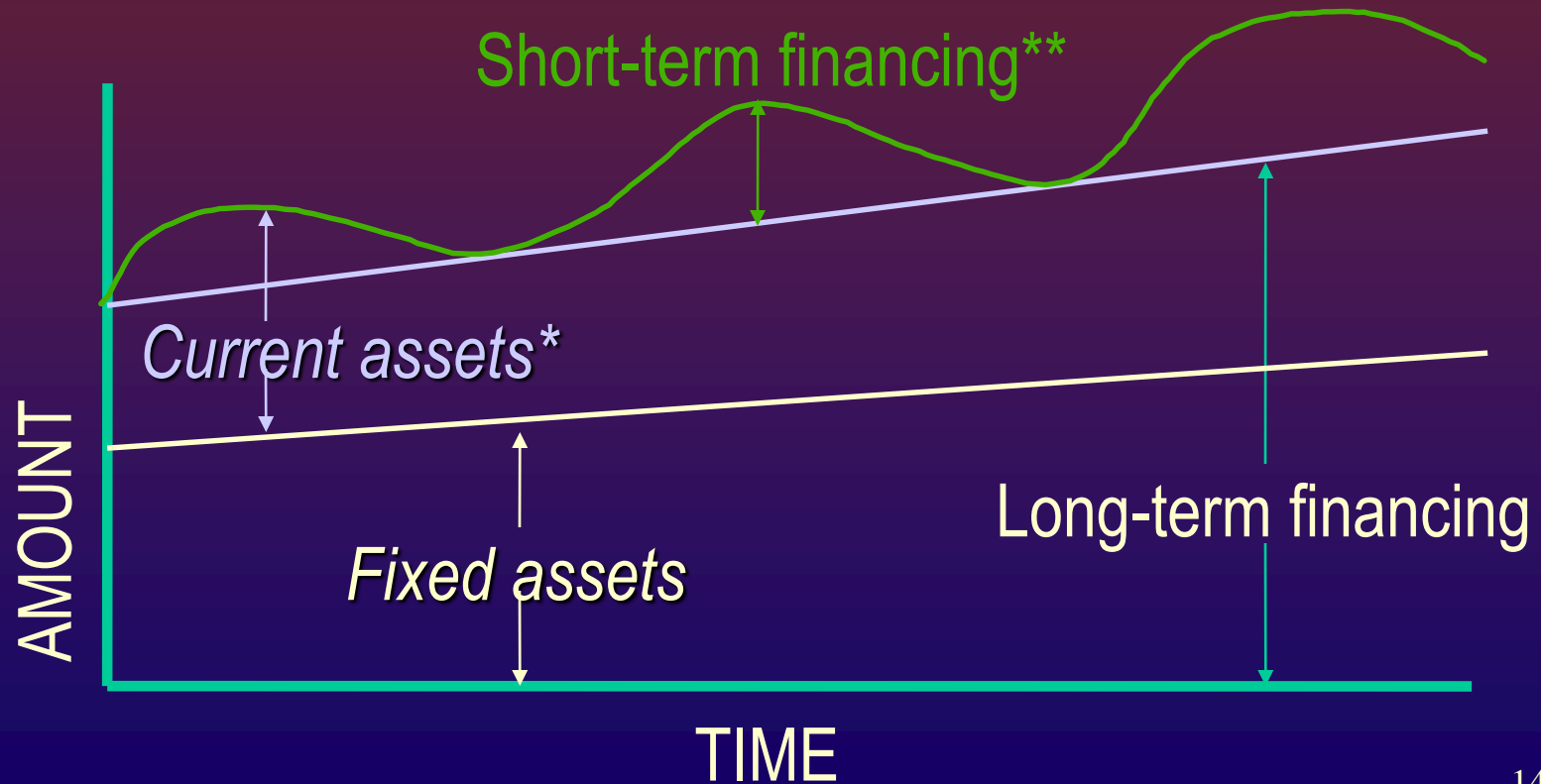
Spontaneous Financing: Trade credit, and other payables and accruals, that arise spontaneously in the firm's day-to-day operations

- ❖ Based on policies regarding payment for purchases, labor, taxes, and other expenses
- ❖ Finance managers should be concerned more with managing the mix of financing
- ❖ Hedging (or Matching Maturity Approach): A method of financing where each asset would be offset with a financing instrument of the same approximate maturity



\* Less amount financed

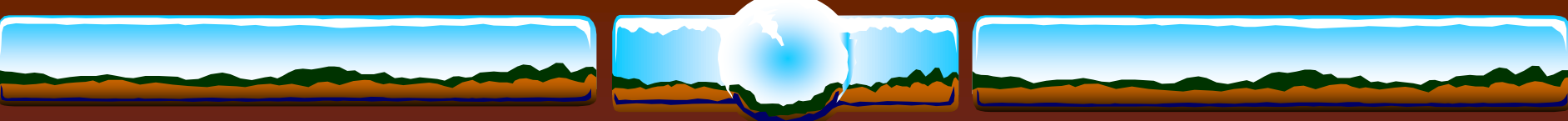
\*\* In addition to spontaneous financing (payables and accruals).



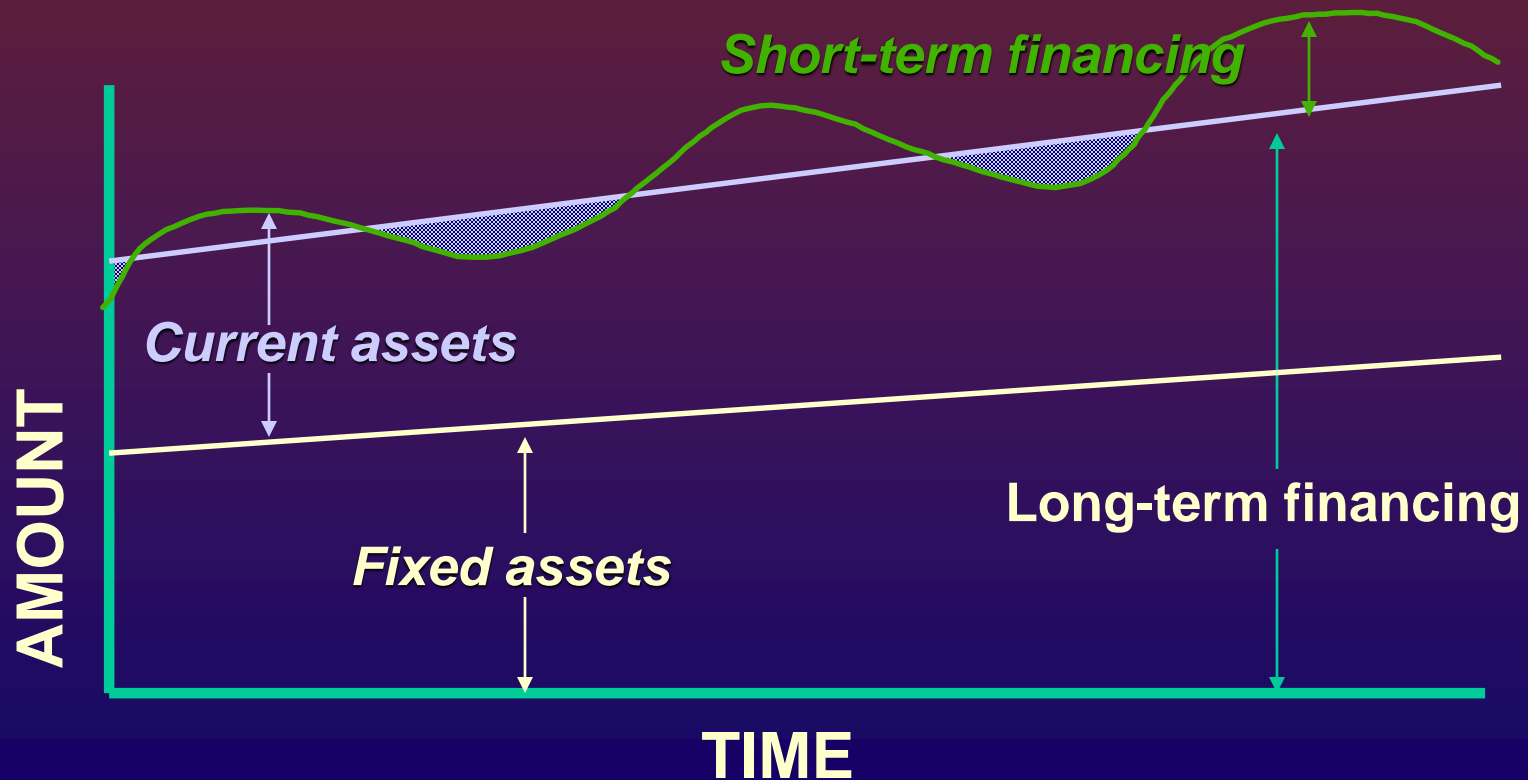


# The Hedging Approach

- ❖ Fixed assets and the non-seasonal portion of current assets are financed with long-term debt and equity
- ❖ Seasonal needs are financed with short-term loans (under normal operations sufficient cash flow is expected to cover the short-term financing cost)
- ❖ Seasonal orders require the purchase of inventory beyond current levels → Increased inventory is used to meet the increased demand for the final product → Sales become receivables → Receivables are collected and become cash → The resulting cash funds can be used to pay off seasonal short-term loan and cover associated financing costs

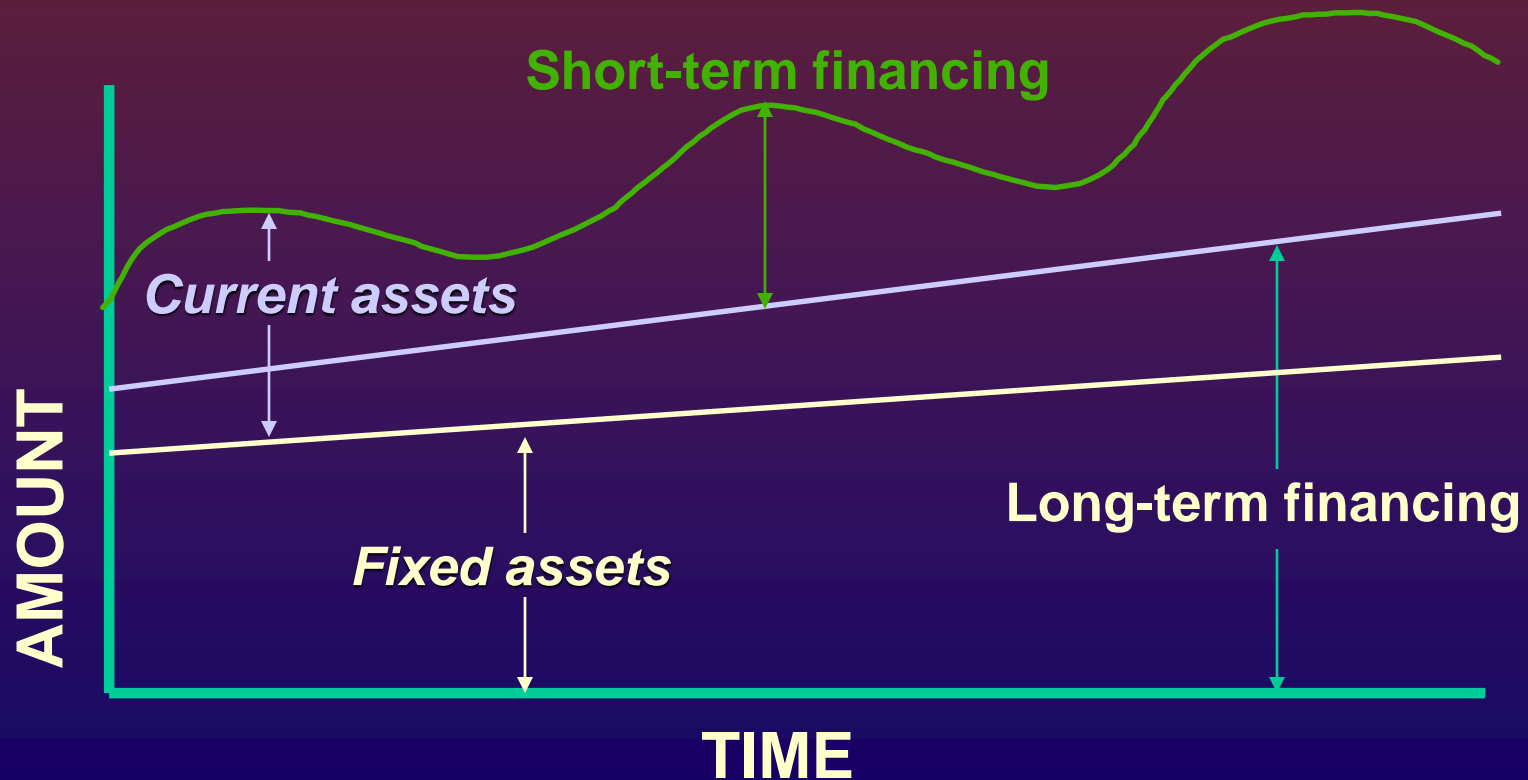


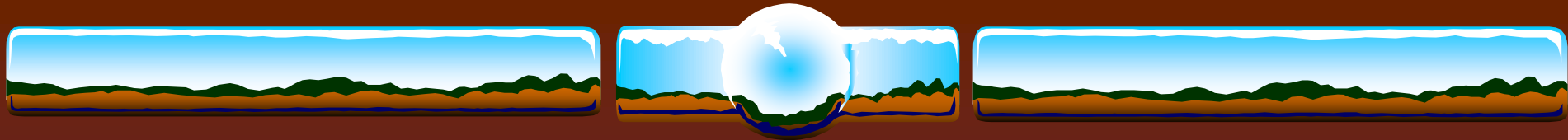
Conservative Approach: Firm can reduce risks associated with short-term borrowing by using a larger proportion of long-term financing



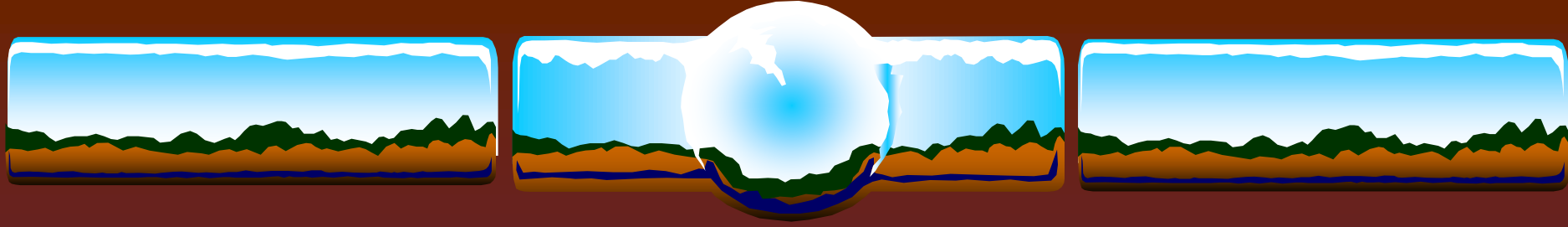


Aggressive Approach: Firm increases risks associated with short-term borrowing by using a larger proportion of short-term financing





<b>Financing Maturity</b> <b>Asset Maturity</b>	<b>SHORT-TERM</b>	<b>LONG-TERM</b>
<b>SHORT-TERM</b> <i>(Temporary)</i>	<b>Moderate Risk-Profitability</b>	<b>Low Risk-Profitability</b>
<b>LONG-TERM</b> <i>(Permanent)</i>	<b>High Risk-Profitability</b>	<b>Moderate Risk-Profitability</b>



# Cash and Marketable Securities Management

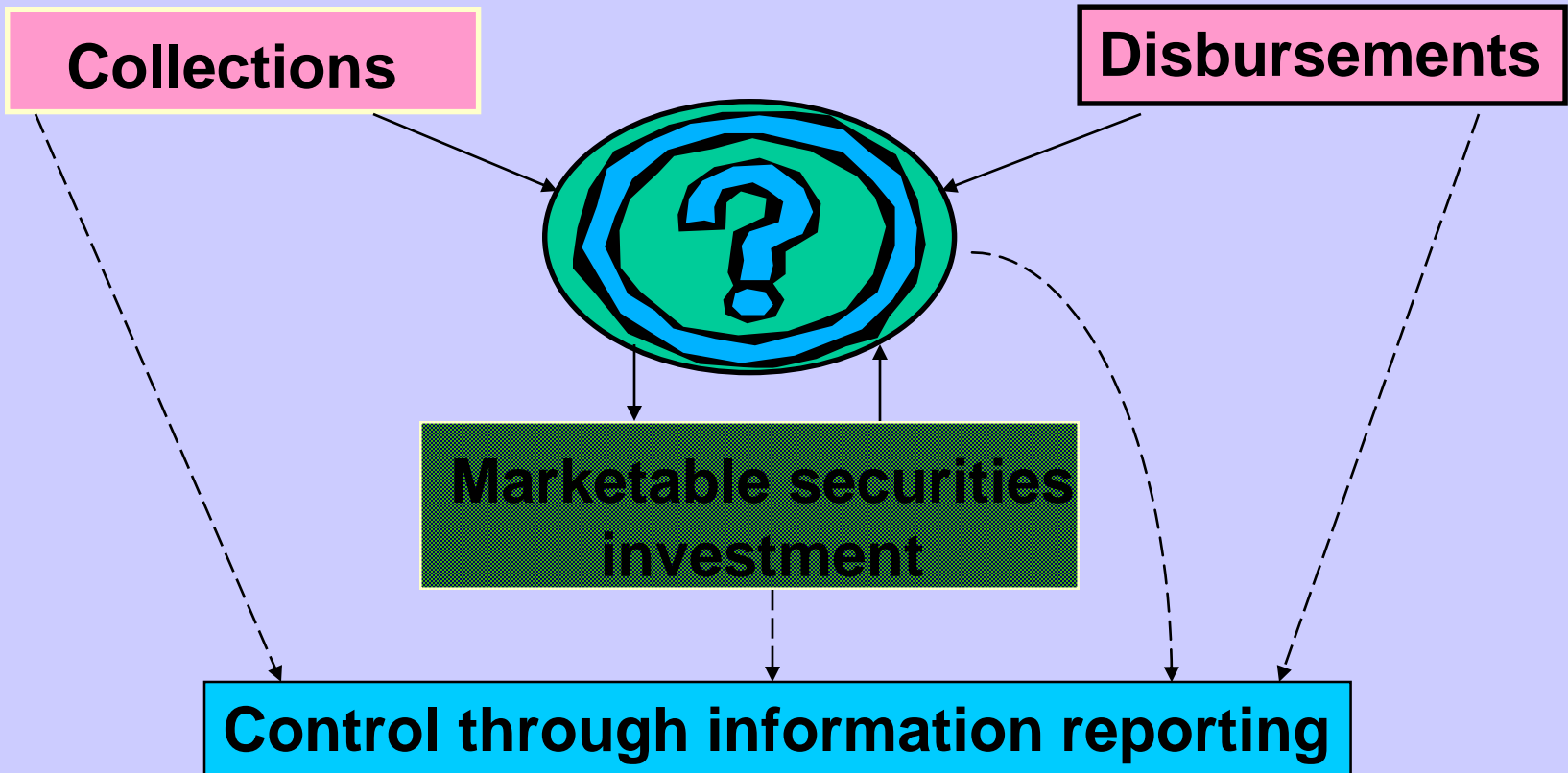


# Motives for Holding Cash

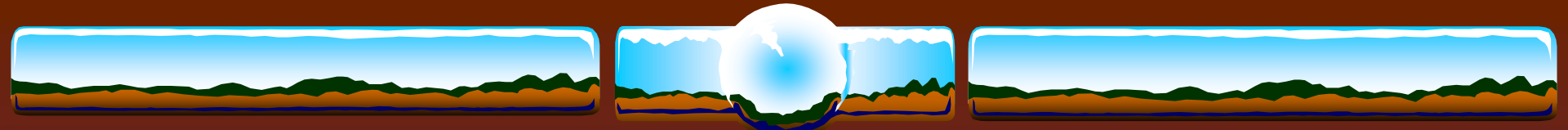
- ❖ Transactions Motive
- ❖ Speculative Motive (for temporary opportunities)
- ❖ Precautionary Motive

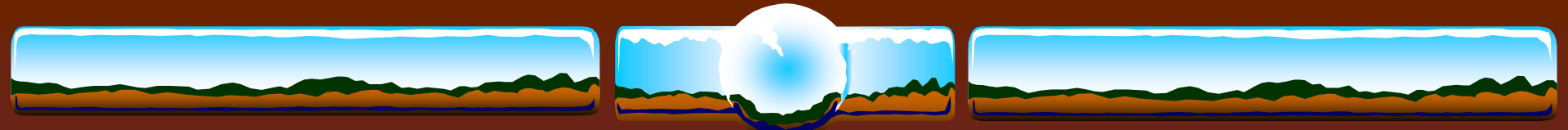


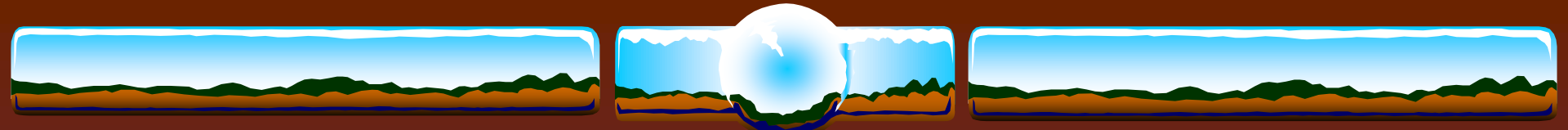
# Management System



—————> = Funds Flow      - - - - -> = Information Flow

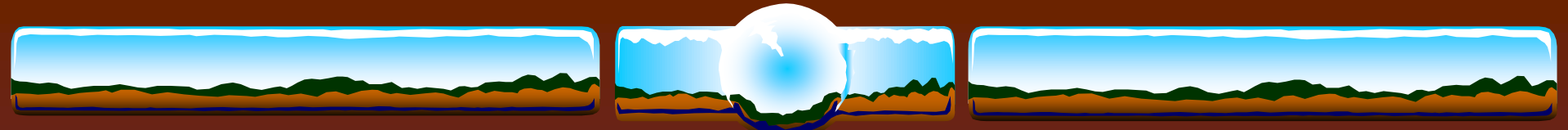
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- ❖ Speeding Up Cash Receipts
  - ❖ Examples
  - ❖ Expedite preparing and mailing the invoice
  - ❖ Accelerate the mailing of payments from customers
  - ❖ Reduce the time during which payments received by the firm remain uncollected
  - ❖ By reducing Collection Float
  - ❖ Collection Float is total time between the mailing of the check by the customer and the availability of cash to the receiving firm
  - ❖  $\text{Collection Float} = \text{Mail Float} + \text{Deposit Float}$
  - ❖  $\text{Deposit Float} = \text{Processing Float} + \text{Availability Float}$

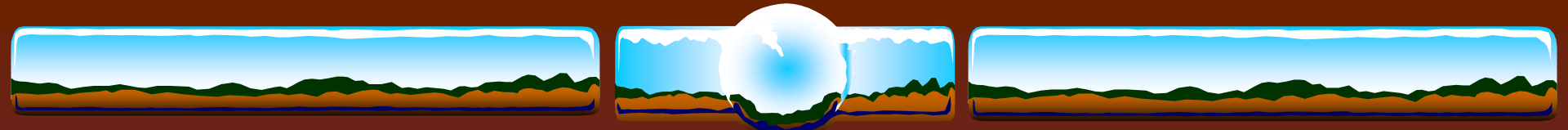
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- ❖ Mail Float is time the check is in the mail
  - ❖ Processing Float is time it takes a company to process the check internally
  - ❖ Availability Float is time consumed in clearing the check through the banking system
  - ❖ Deposit Float is time during which the check received by the firm remains uncollected funds
  - ❖ Lock Box is a post office box maintained by a firm's bank that is used as a receiving point for customer remittances
  - ❖ Preauthorized Debit is the transfer of funds from a payor's bank account on a specified date to the payee's bank account; the transfer is initiated by the payee with the payor's advance authorization

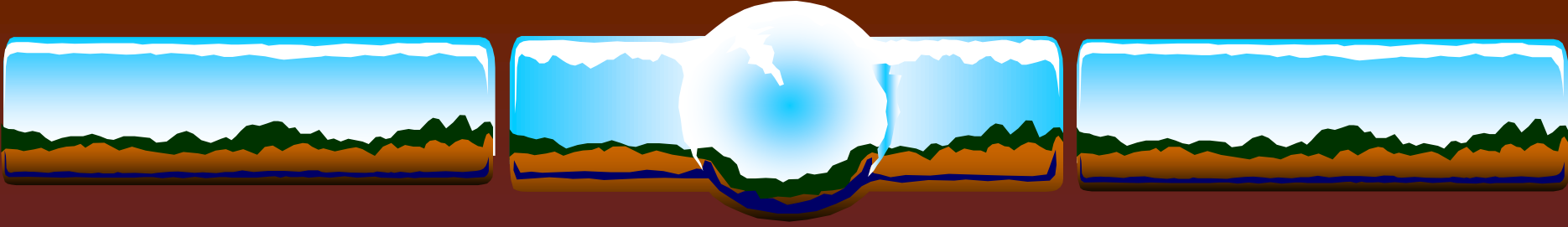
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- ❖ Concentration Banking is the movement of cash from lockbox or field banks into the firm's central cash pool residing in a concentration bank
  - ❖ Compensating Balance is non-interest-bearing demand deposits maintained by a firm to compensate a bank for services provided, credit lines, or loans
  - ❖ Slowing Down Payments
  - ❖ 'Net Float' is the difference between the balance shown in a firm's checkbook balance and the balance on bank's books
  - ❖ Control of Disbursements
  - ❖ Remote Disbursement is a system in which the firm directs checks to be drawn on a bank that is geographically remote from its customer so as to maximize check-clearing time





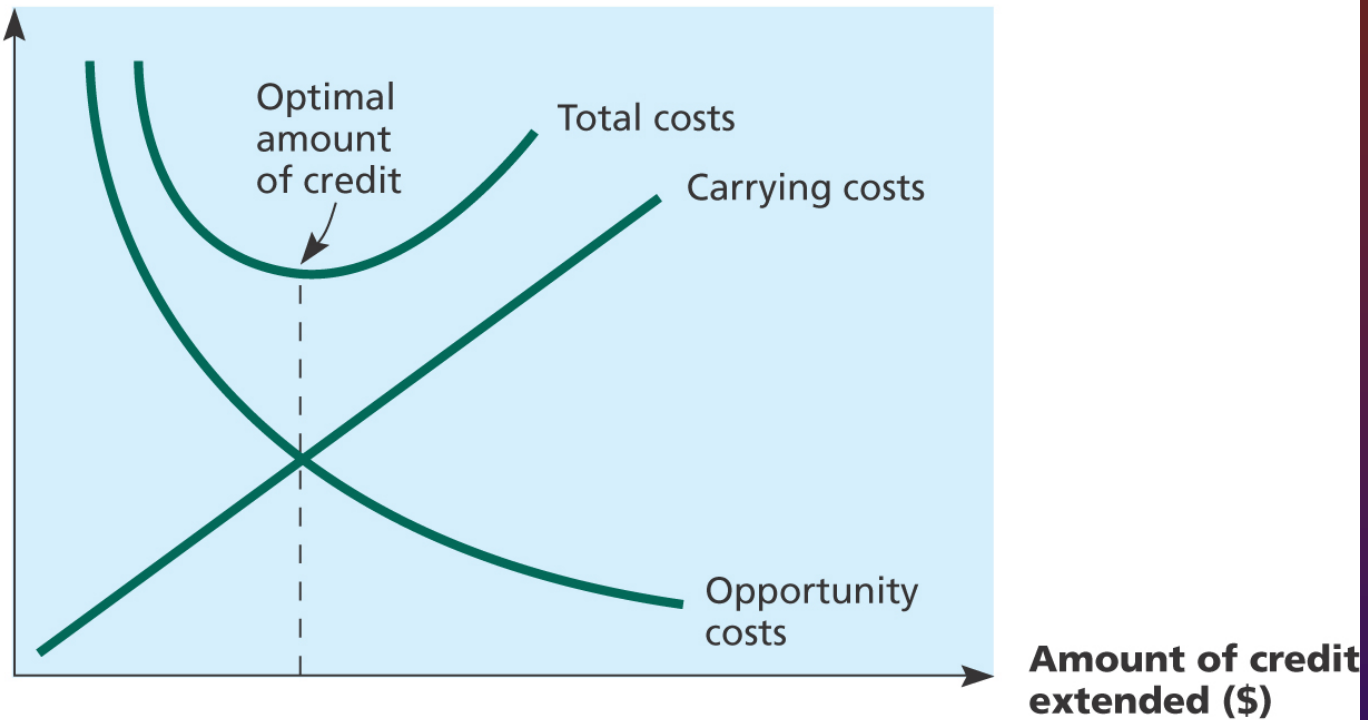
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- ❖ Marketable Securities are treated on a Balance Sheet as Cash equivalents if maturities are less than three months at the time of acquisition. Short-term investments if remaining maturities are less than one year.
  - ❖ ‘Ready Cash Segment’ is optimal balance of marketable securities held to take care of probable deficiencies in the firm’s cash account
  - ❖ ‘Controllable Cash Segment’ is marketable securities held for meeting controllable (knowable) outflows, such as taxes and dividends
  - ❖ ‘Free Cash Segment’ is “Free” marketable securities (that is, available for as yet unassigned purposes).

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- ❖ Variables that go into selection of Marketable Securities
  - ❖ Safety, Liquidity, Interest Rate Risk, and Maturity
  - ❖ Common Money Market Instruments: Treasury bills, treasury notes/bonds, Repos, Bankers Acceptances, Commercial Papers (CP), Negotiable Certificate of Deposit
  - ❖ Bankers Acceptances are short-term promissory trade notes for which a bank (by having “accepted” them) promises to pay the holder the face amount at maturity
  - ❖ CP are short-term, unsecured promissory notes, generally issued by large corporations
  - ❖ A large-denomination investment in a negotiable time deposit at a commercial bank or savings institution paying a fixed or variable rate of interest for a specified period of time



# Receivables Management

Cost  
(\$)

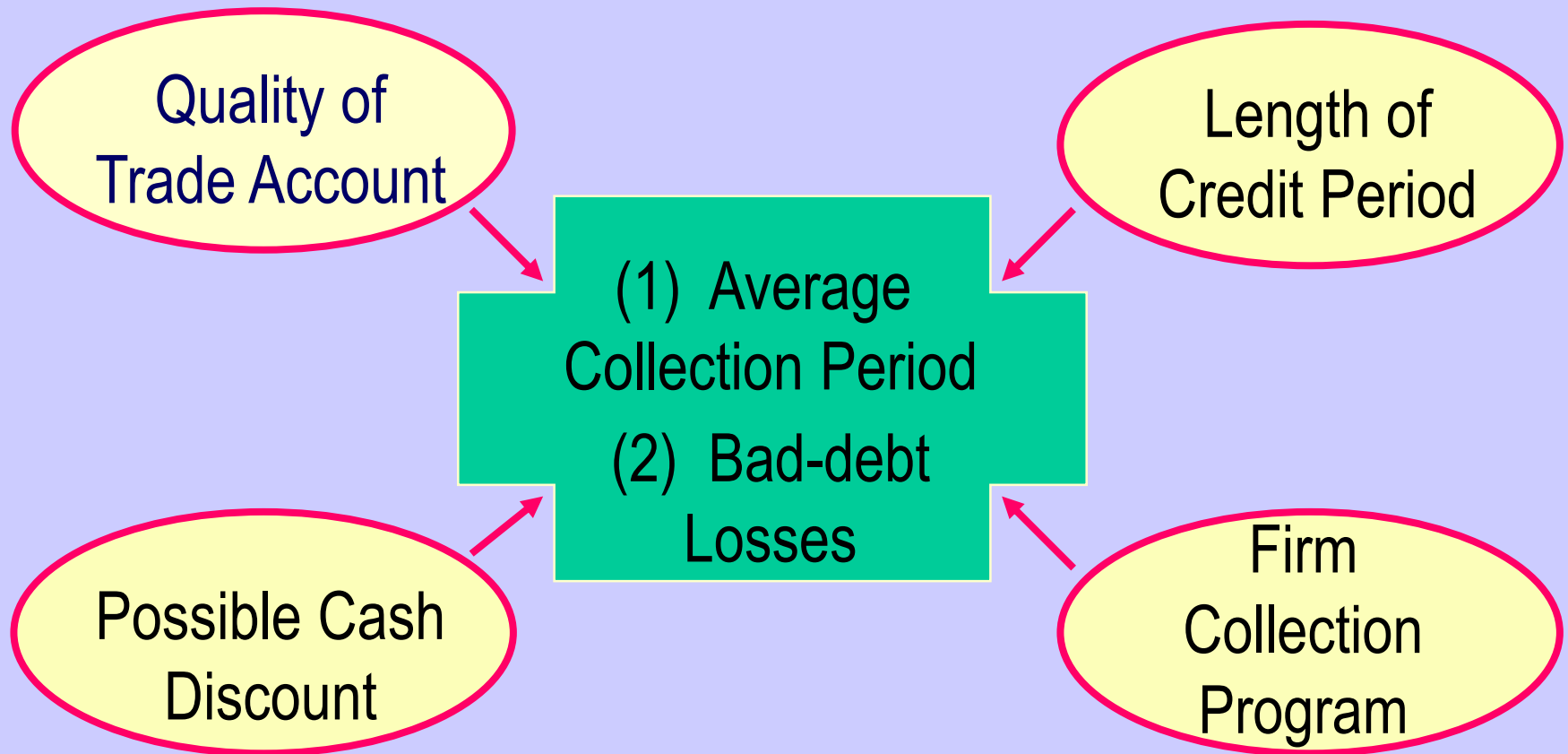


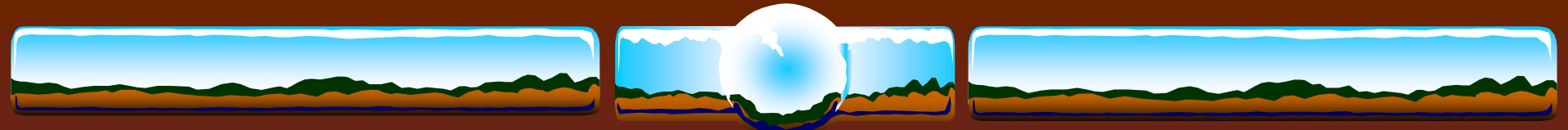
*Carrying costs* are the cash flows that must be incurred when credit is granted. They are positively related to the amount of credit extended.

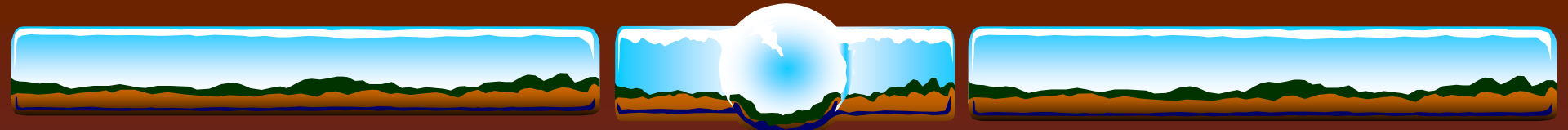
*Opportunity costs* are the lost sales resulting from refusing credit. These costs go down when credit is granted.



# Credit and Collection Policies of Firm



- 
- ❖ Credit Standards: Minimum quality of credit worthiness of a credit applicant that is acceptable to the firm.
  - ❖ When should a firm stop lowering its credit standards?
  - ❖ Costs include a) a larger credit department; b) additional clerical work; c) servicing additional accounts; d) bad-debt losses; e) opportunity costs
  - ❖ SB is not operating at full capacity and wants to determine if a relaxation of their credit standards will enhance profitability
  - ❖ The firm is currently producing a single product with variable costs of Rs. 10 and selling price of Rs. 12
  - ❖ Relaxing credit standards is not expected to affect current customer payment habits

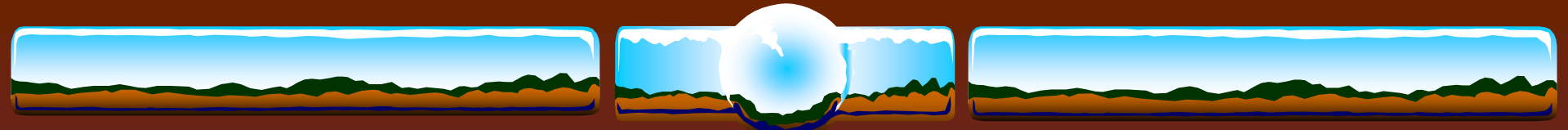
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- ❖ Additional annual credit sales of Rs. 1 lakhs and an average collection period of 3 months for new accounts is expected
  - ❖ The before-tax opportunity cost for funds 'tied-up' in additional receivables is 25%
  - ❖ Should SB relax their credit standards?

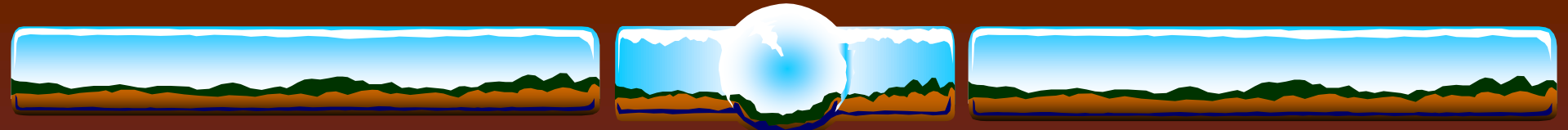


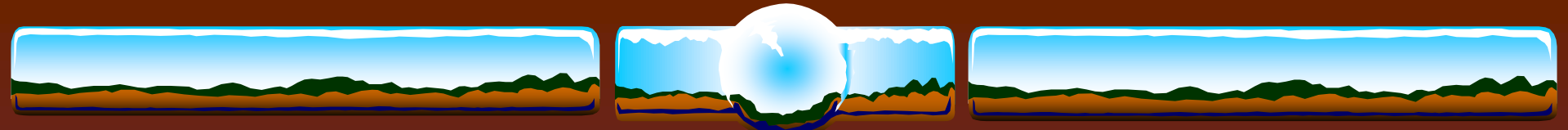


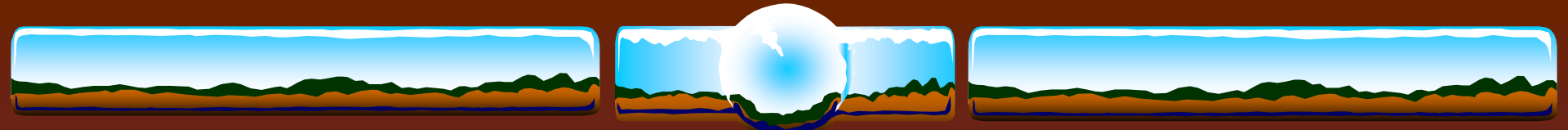
# Example

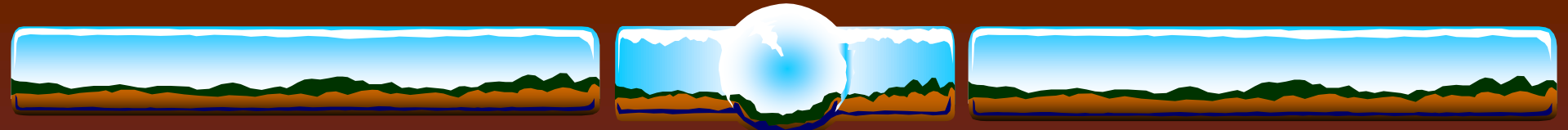
- ❖ Profitability of additional sales = (Rs. 2 contribution) x (8,333 units) = Rs. 16,666
- ❖ Additional receivables = (Rs. 100,000 sales) / (4 Turns) = Rs. 25,000
- ❖ Investment in additional receivables = (Rs. 10/Rs. 12) x (Rs. 25,000) = Rs. 20,833
- ❖ Required pre-tax return on additional investment = (25% opportunity cost) x Rs. 20,833 = Rs. 5208.33
- ❖ Profits > Required pre-tax return
- ❖ But, we are ignoring here any bad-debt losses that may arise

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- ❖ Credit Terms: Specifies the length of time over which credit is extended to a customer and the discount, if any, given for early payment. For example, '2/10, net 45'
  - ❖ SB is considering changing its credit period from "net 45" (which resulted in 9 A/R "Turns" per year) to "net 60" (which is expected to result in 6 A/R "Turns" per year)
  - ❖ The firm is currently producing a single product with variable costs of Rs. 10 and a selling price of Rs. 12
  - ❖ Additional annual credit sales of Rs. 2.4 lakhs from new customers are forecasted, in addition to the current Rs. 20 lakhs in annual credit sales
  - ❖ The before-tax opportunity cost for funds "tied-up" in additional receivables is 25%. What should SB do?

- 
- ❖ Profitability of additional sales = (Rs. 2) x (20000 units) = Rs. 40,000
  - ❖ Additional receivables = (Rs. 240000 sales)/(9 turns) = Rs. 26667
  - ❖ Investment in additional receivables = (Rs.10/Rs.12) x 26667 = Rs. 22222
  - ❖ Previous receivable level (original sales) = (Rs. 20 lakhs)/(9 turns) = Rs. 2,22,222
  - ❖ New receivable level (original sales) = (Rs. 20 lakhs)/(6 turns) = Rs. 3,33,333
  - ❖ Investment in additional receivables (original sales) = Rs. 333333 – Rs. 222222 = Rs. 1,11,111

- 
- ❖ Total investment in additional receivables =  $1,11,111 + 22,222 = \text{Rs. } 1,33,333$
  - ❖ Required pre-tax return on additional investment =  $(25\% \text{ opportunity cost}) \times \text{Rs. } 1,33,333 = \text{Rs. } 33,333$
  - ❖ Profits  $>$  Pre-tax required returns
  - ❖ We are ignoring here any bad-debt losses that may arise
  - ❖ Cash Discount Period is the period of time during which a cash discount can be taken for early payment. For example, “2/10” allows a cash discount in the first 10 days from the invoice date
  - ❖ BW is considering changing the credit period from “1/10, net 60” (which has resulted in 6 A/R “Turns” per year) to “2/10, net 60”

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- ❖ Current annual credit sales of Rs. 50 lakhs are expected to be maintained
  - ❖ The firm expects 20% of its credit customers (in value) to take cash discount and thus increase A/R “Turns” to 8
  - ❖ The before-tax opportunity cost for each dollar of funds “tied-up” in additional receivables is 25%
  - ❖ Should the firm introduce a cash discount
  - ❖ Receivable level (original) = (Rs. 50 lakhs)/(6 turns) = Rs. 8,33,333
  - ❖ Receivable level (new) = (Rs. 50 lakhs)/(8 turns) = Rs. 6,25,000
  - ❖ Reduction of investment in Accounts Receivable = Rs. 833333 – Rs. 625000 = Rs. 2,08,333

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- ❖ Pre-tax cost of the cash discount =  $0.01 \times 0.2 \times$   
Rs. 50 lakhs = Rs. 10,000
  - ❖ Pre-tax opportunity savings on reduction in  
Accounts receivable = (25% opportunity cost)  $\times$   
Rs. 2,08,333 = Rs. 52,083
  - ❖ So, Savings > Costs
  - ❖ We are ignoring here any bad-debt losses that  
may arise
  - ❖ Default risk and bad-debt losses



# Default Risk and Bad-Debt Losses

## Example

	Present Policy	Policy A	Policy B
Demand	\$2,400,000	\$3,000,000	\$3,300,000
Incremental sales		\$ 600,000	\$ 300,000
<u>Default losses</u>			
Original sales	2%		
Incremental Sales		10%	18%
<u>Avg. Collection Pd.</u>			
Original sales	1 month		
Incremental Sales		2 months	3 months



# Default Risk and Bad-Debt Losses

	Policy A	Policy B
1. Additional sales	600,000	300,000
2. Profitability: (20% contribution) x (1)	120,000	60,000
3. Add. bad-debt losses: (1) x (bad-debt %)	60,000	54,000
4. Add. receivables: (1) / (New Rec. Turns)	100,000	75,000
5. Inv. in add. receivables: (.80) x (4)	80,000	60,000
6. Required before-tax return on additional investment: (5) x (20%)	16,000	12,000
7. Additional bad-debt losses + additional required return: (3) + (6)	76,000	66,000
8. Incremental profitability: (2) - (7)	44,000	(6,000)

Adopt Policy A but not Policy B.



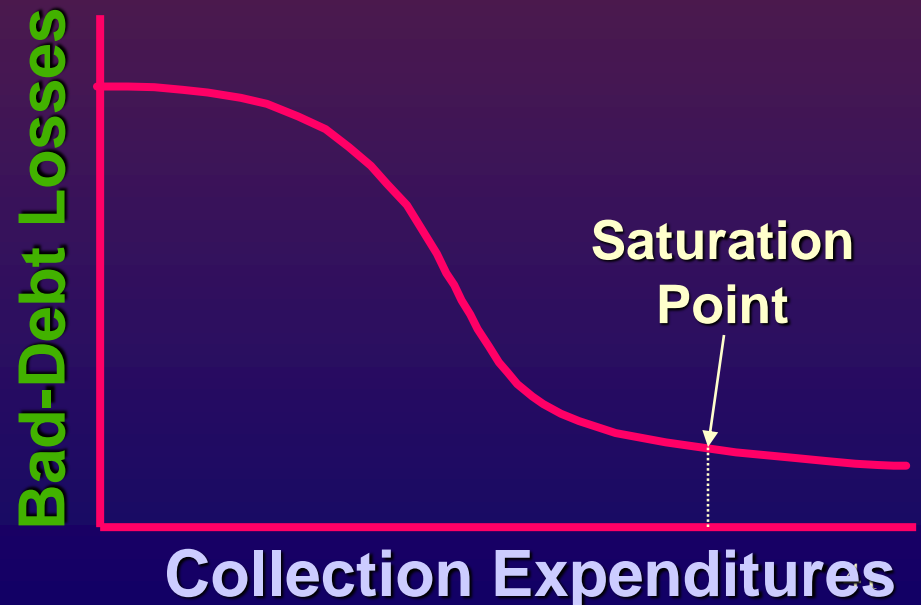


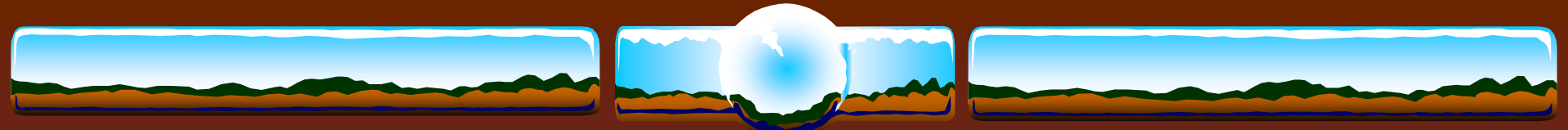
# Collection Policy and Procedures

## Collection Procedures

- ◆ Letters
- ◆ Phone calls
- ◆ Personal visits
- ◆ Legal action
- ◆ Other actions

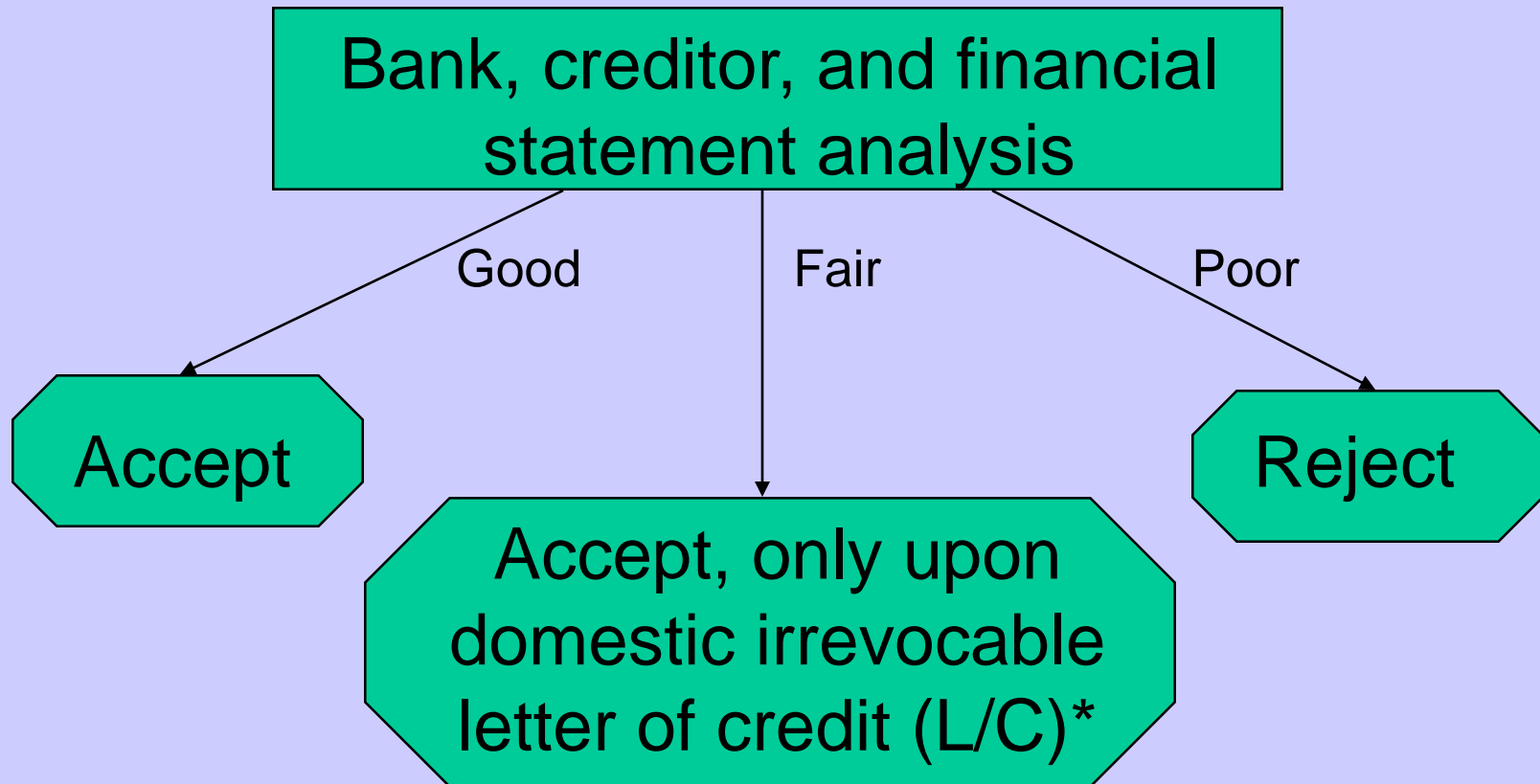
The firm should increase collection expenditures until the marginal reduction in bad-debt losses equals the marginal outlay to collect.



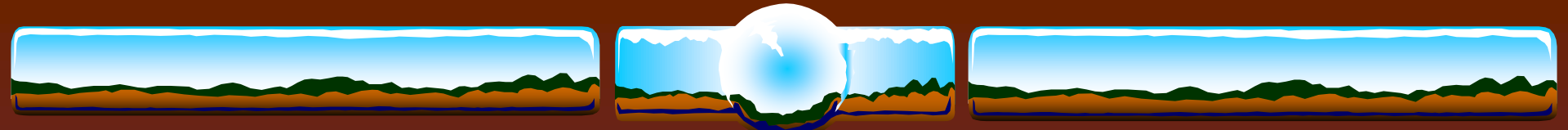
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- ❖ Analyzing the Credit Applicant → Use credit scoring models
  - ❖ Look at 5C's of the customer: Character, Capacity, Capital, Collateral, and Conditions
  - ❖ Willingness to meet Financial Obligations, Ability, Reserves
  - ❖ Obtaining (and analyzing) information on the credit applicant
    - ❖ Financial statements
    - ❖ Credit ratings and reports
    - ❖ Bank checking
    - ❖ Trade checking
    - ❖ Company's own experience
  - ❖ Making the credit decision

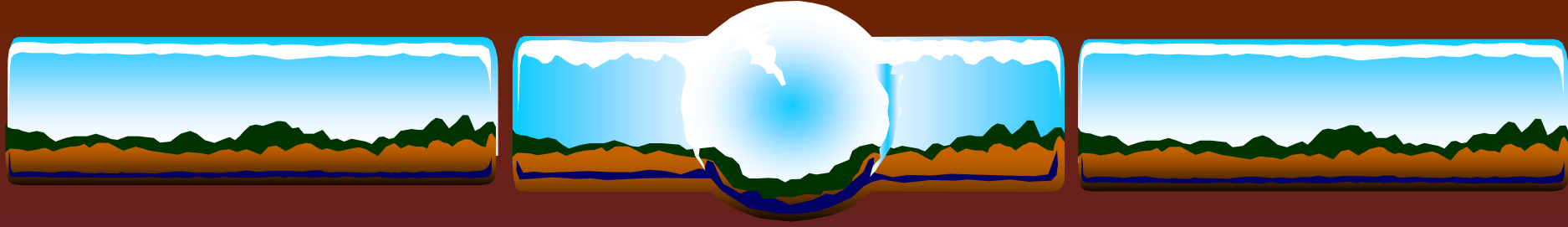


# Sample Investigation Process Flow Chart

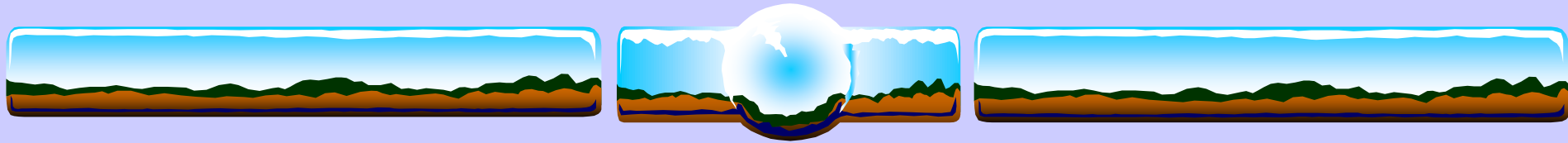


\* That is, the credit of a bank is substituted for customer's credit. 43

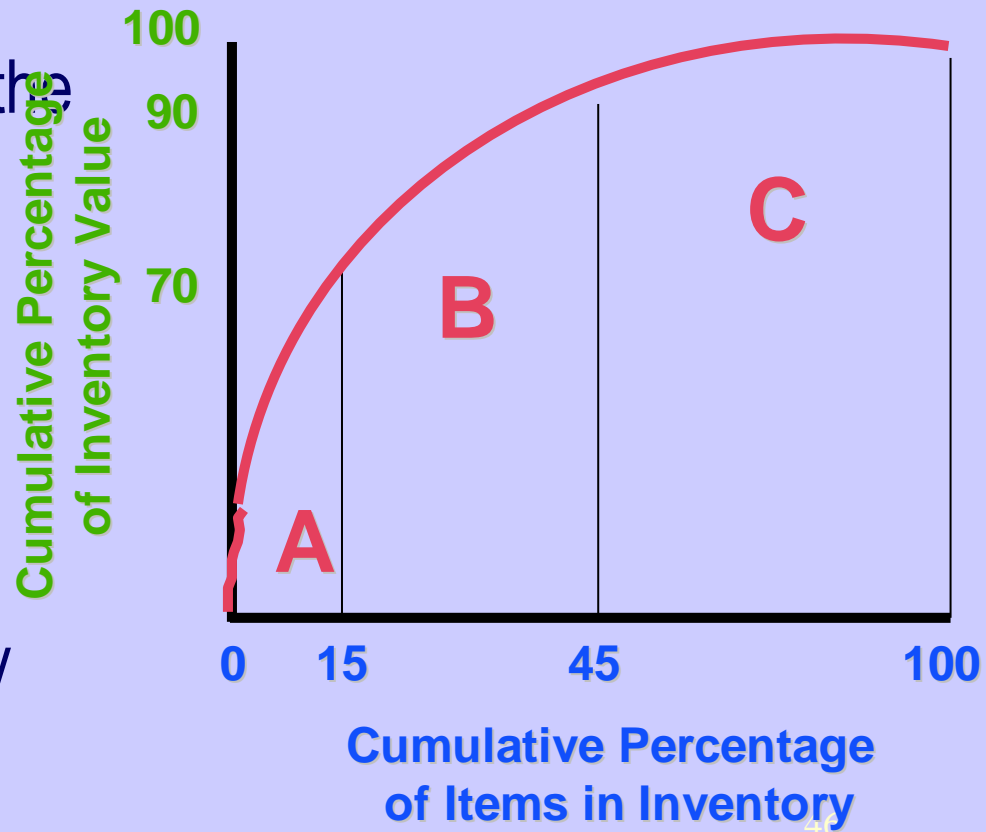
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- ❖ Aging Analysis is used to track existing customers
  - ❖ Line of Credit is a limit to the amount of credit extended to an account. Purchaser can buy on credit up to that limit. Advantage: streamlines the procedure for shipping goods
  - ❖ Outsourcing Credit and Collections: The entire credit and/or collection function(s) are outsourced to a third-party company
  - ❖ Usually the firm makes the credit decisions, maintains the ledger accounts, processes the payments, and initiates collections

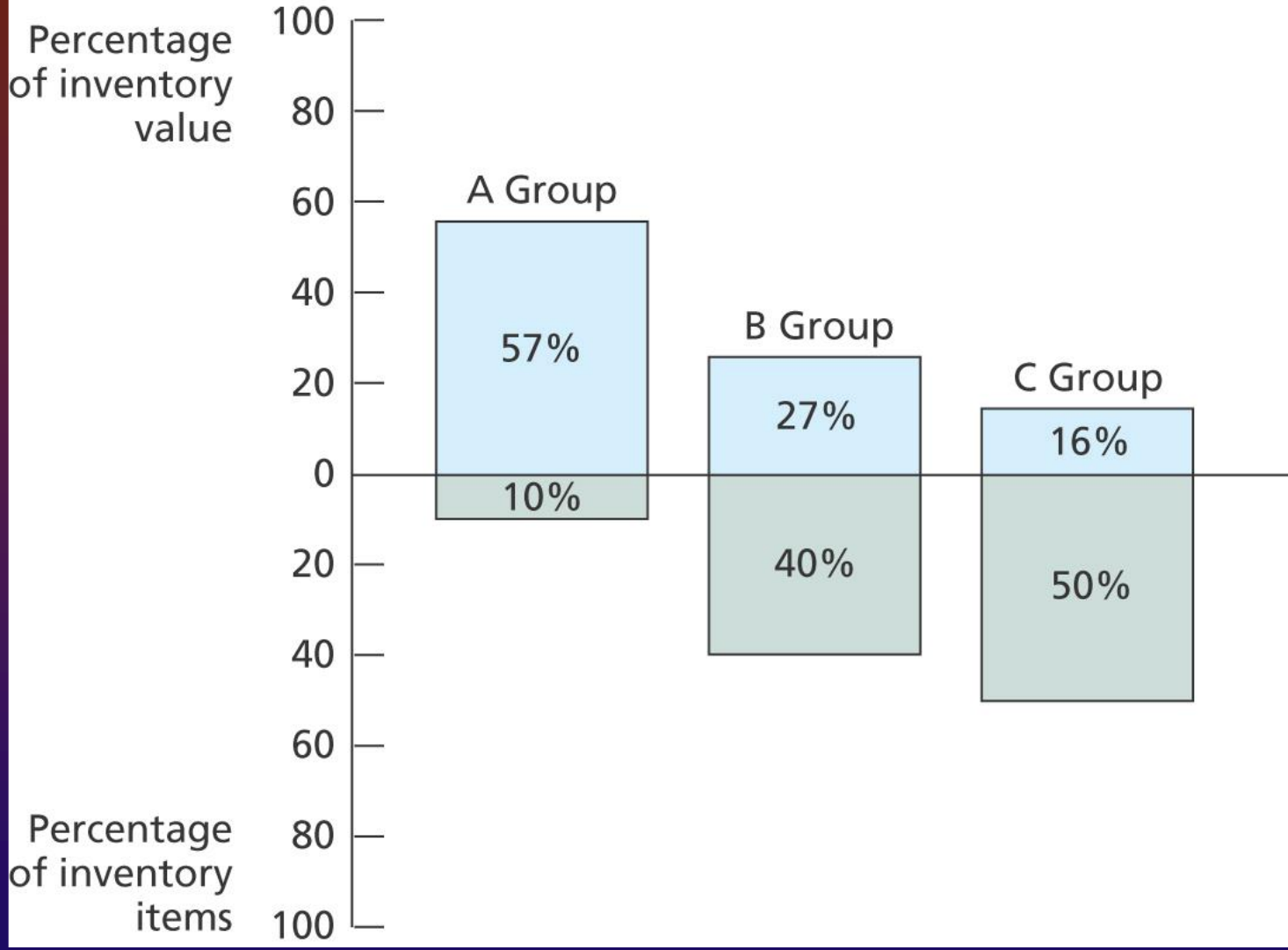


# Inventory Management



- ❖ Inventory Types: Raw-materials inventory, Work-in-process inventory, In-transit inventory, Finished-goods inventory
- ❖ How does a firm determine the appropriate level of inventories?
- ❖ Cost-Benefit Analysis
- ❖ ABC method of inventory control: Controls expensive inventory items more closely than less expensive items







# How Much to Order?

The optimal quantity to order depends on:

Forecast usage

Ordering cost

Carrying cost

C: Carrying costs per unit per period

O: Ordering costs per order

S: Total usage during the period

Total inventory costs (T) =  $C (Q / 2) + O (S / Q)$

Economic Order Quantity\*

Other Points to consider

Lead Time

Order Point

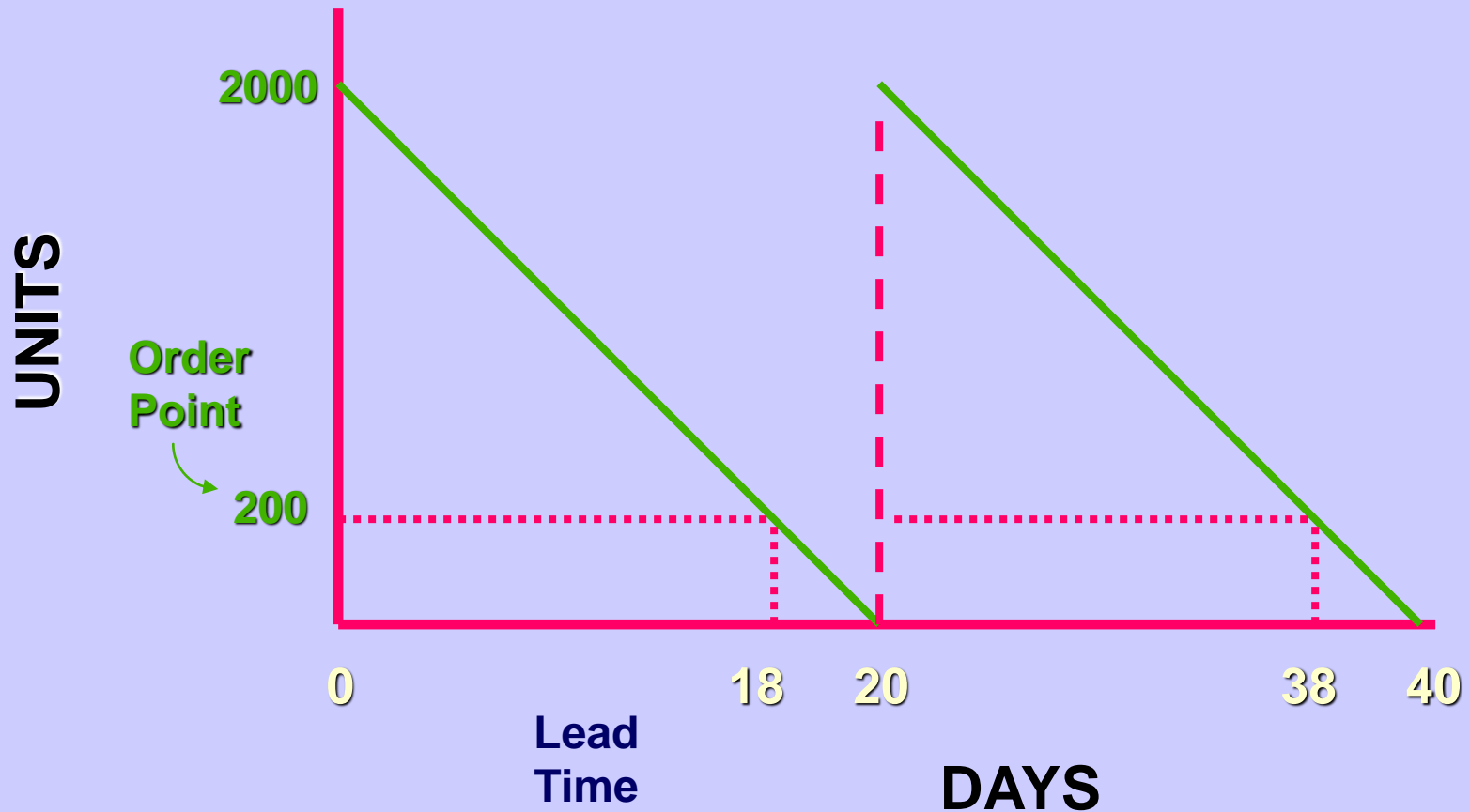
$$Q^* = \sqrt{\frac{2(O)(S)}{C}}$$

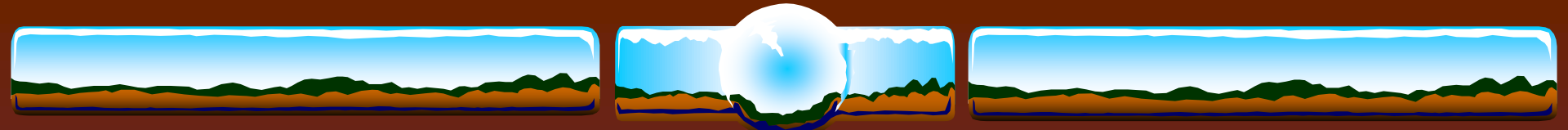




# Example of When to Order

Economic Order Quantity ( $Q^*$ )



- 
- ❖ Safety Stock -- Inventory stock held in reserve as a cushion against uncertain demand (or usage) and replenishment lead time
  - ❖ Safety stock depends on: a) amount of uncertainty in inventory demand; b) amount of uncertainty in the lead time; c) cost of running out of inventory; d) cost of carrying inventory

Inventory  
(units)

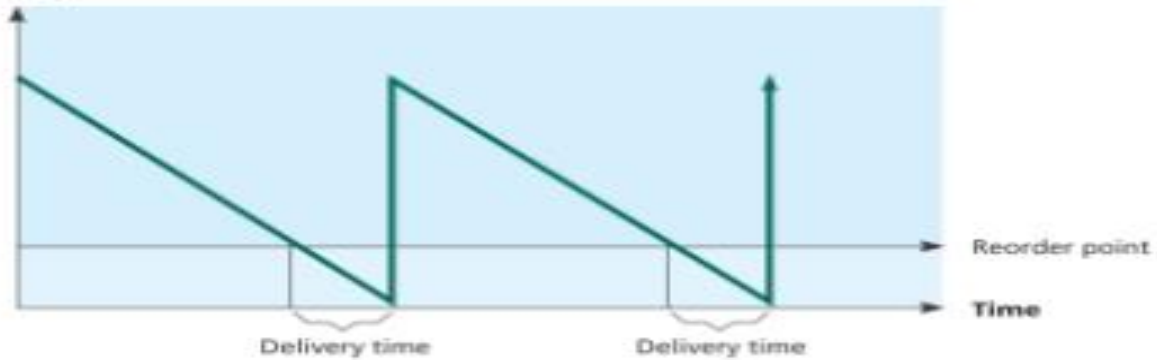
### A. Safety stocks



With a safety stock, the firm reorders when inventory reaches a minimum level.

Inventory  
(units)

### B. Reorder points



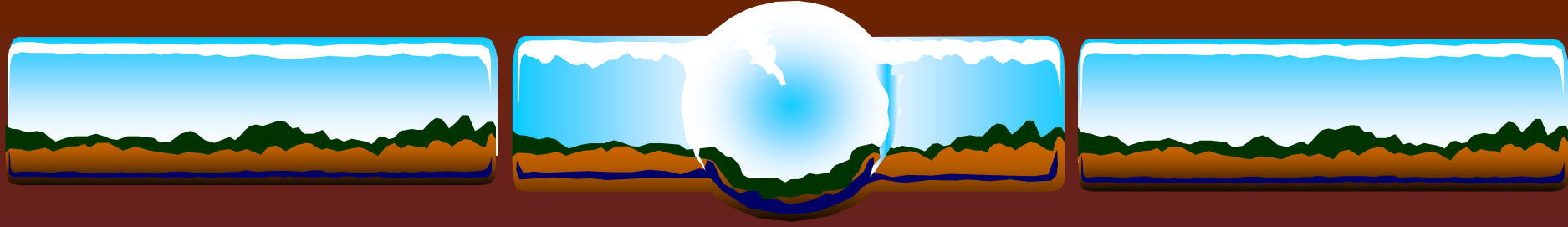
When there are lags in delivery or production times, the firm reorders when inventory reaches the reorder point.

Inventory  
(units)

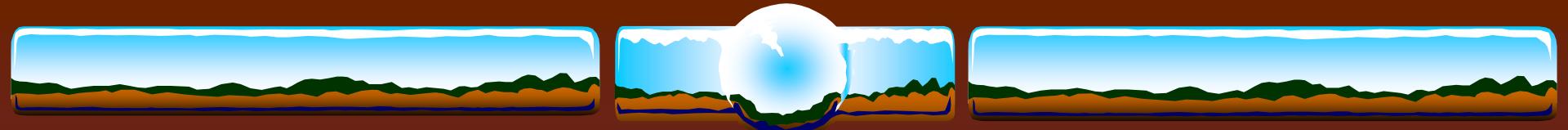
### C. Combined reorder points and safety stocks

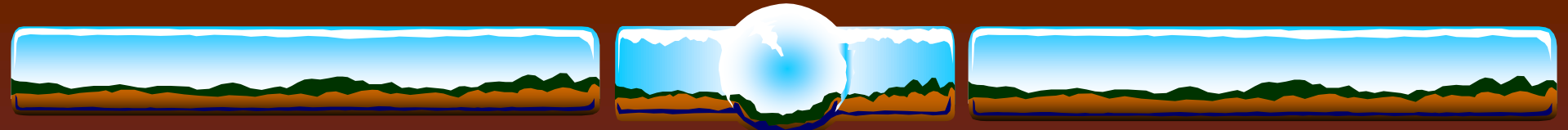


By combining safety stocks and reorder points, the firm maintains a buffer against unforeseen events.



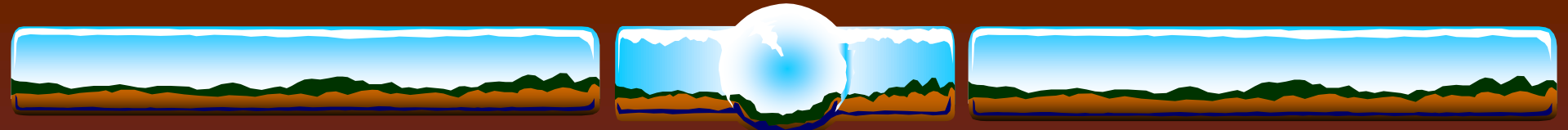
# Short-term Financing

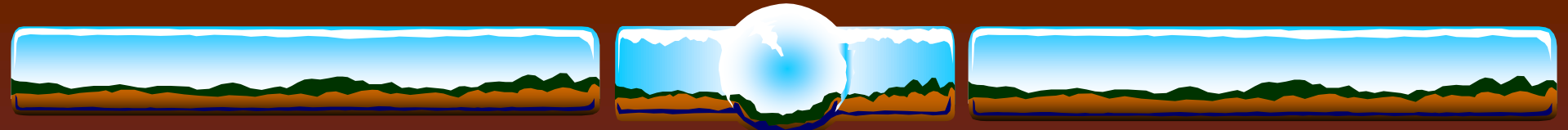
- 
- ❖ Spontaneous Financing could be as:
    - ❖ Accounts Payable (Trade Credit from Suppliers)
    - ❖ Accrued Expenses
  - ❖ Trade Credit is credit granted from one business to another
  - ❖ Open Accounts: the seller ships goods to the buyer with an invoice specifying goods shipped, total amount due, and terms of the sale
  - ❖ Notes Payable: the buyer signs a note that evidences a debt to the seller
  - ❖ What is the approximate annual cost to forgo the cash discount of “2/10, net 30” after the first ten days?

- 
- ❖ 37.2%
  - ❖ Stretching accounts payable
  - ❖ Postponing payment beyond the end of the net period is known as 'stretching accounts payable' or 'leaning on the trade'
  - ❖ Costs: interest penalties and downward credit ratings
  - ❖ Accrued Expenses are amounts owed but not yet paid for wages, taxes, interest, and dividends

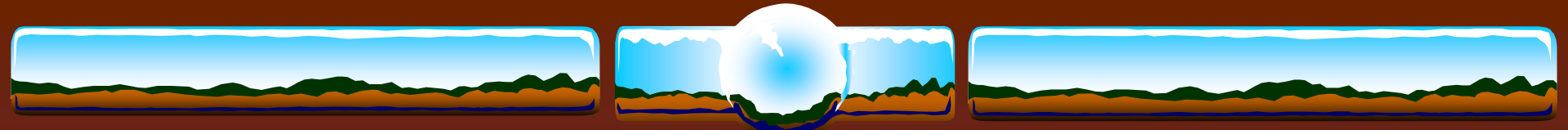
Approximate annual interest cost =

$$\frac{\% \text{ discount}}{(100\% - \% \text{ discount})} \times \frac{365 \text{ days}}{(\text{payment date} - \text{discount period})}$$

- 
- ❖ Negotiated Financing: Money Market Credit (Commercial Paper, Bankers' Acceptances) and Unsecured Loans (Line of Credit, Revolving Credit Agreement, Transaction Loan)
  - ❖ A bank provides a letter of credit, for a fee, guaranteeing the investor that the company's obligation will be paid
  - ❖ So, LC is a promise from a third party (usually a bank) for payment in the event that certain conditions are met. It is frequently used to guarantee payment of an obligation.
  - ❖ Best instrument for lesser-known firms to access lower cost funds
  - ❖ Bankers' Acceptances are used to facilitate foreign trade or the shipment of certain marketable goods

- 
- ❖ Line of Credit (with a bank) is an informal arrangement between a bank and its customer specifying the maximum amount of unsecured credit the bank will permit the firm to owe at any one time.
  - ❖ Revolving Credit Agreement is a formal, legal commitment to extend credit up to some maximum amount over a stated period of time (they pay commitment fee)
  - ❖ Rs. 10 lakhs revolving credit at 10% stated interest rate for 1 year; borrowing for the year was Rs. 600,000; a required 5% compensating balance on borrowed funds; and a 0.5% commitment fee on Rs. 400,000 of unused credit. What is the cost of borrowing?



- 
- ❖ Interest: Rs. 60000 + Commitment Fee: Rs. 2000
  - ❖ Compensating balance: Rs. 30000
  - ❖ So, usable funds becomes Rs. 570000
  - ❖ Cost of Borrowing: 10.88%
  - ❖ Factoring is the selling of receivables to a financial institution, the factor, usually 'without recourse'
  - ❖ Factoring allows a firm to eliminate their credit department and the associated costs
  - ❖ Total cost of factoring is composed of a factoring fee plus an interest charge on any cash advance. Although expensive, it provides the firm with substantial flexibility