

Current assets: meaning, structure, evaluating, sources of financing

Lecture for Corporate Finance



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Outline of the lecture



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- Variants of cash conversion (financial) cycle
- Operating activity
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- Optimal inventories: The economic order quantity (EOQ) model
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- Ways to minimize the operating cycle
- Sources for current assets financing

Structure of current assets:



Non-fixed assets (Current assets) – expected to be realized in the normal operating cycle or within 12 months after the reporting period; held primary for the purpose of trading; cash and cash equivalents:

Operating cycle - the time period from the moment of purchasing of raw materials to receiving money from the sale of finished products made from these raw materials

Inventories (production inventories (raw materials and components); incomplete production (work in process); finished product; goods, commodities)

Current biological assets (young animals - calves, foals, lambs; poultry; fish; rabbits; plant seedlings)

Accounts receivable; Trade receivables

Prepayments and accrued income

Accounts receivable from the budget

Accounts receivable from the tax profit

Other current receivables

Short-term financial investments (stocks, bonds of other enterprises, states; deposits for a term of less than 1 year)

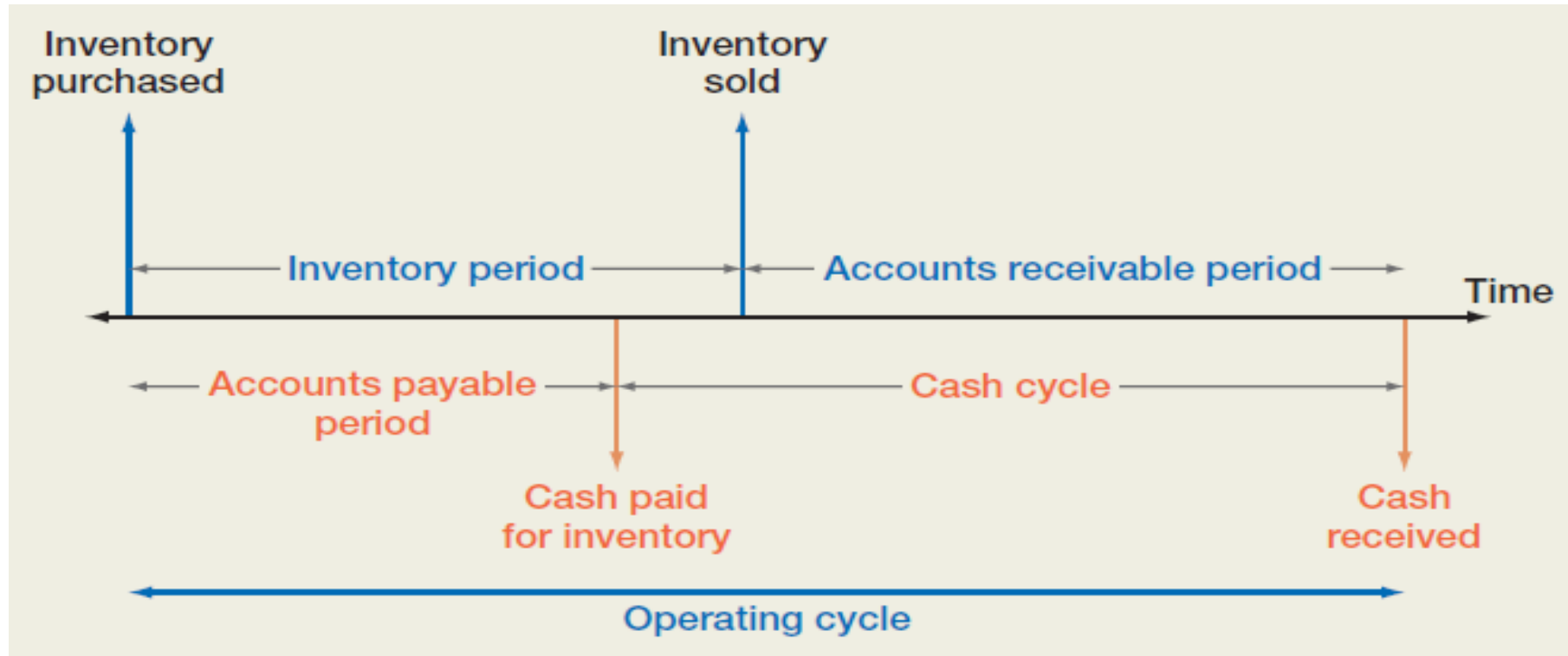
Cash and marketable securities; Cash and cash equivalents (financial investments for up to 3 months)

Prepayments and deferred costs (made prepayment for tickets, periodicals, rent)

Other current assets

Total current assets

Production cycle, operating cycle, cash conversion (financial) cycle



Production cycle, operating cycle, cash conversion (financial) cycle



- **Inventory period (production cycle; Days inventory outstanding, DIO)** – period of time from inventories purchase to selling of finished production, made from these inventories

$$\text{DIO, days} = 360 / (\text{Cost of production sold} / \text{Average inventories})$$

- **Accounts receivable period (Days Sales Outstanding, DSO)** - time between sale of finished production, collection of the receivable and receiving money from buyers.

$$\text{DSO, days} = 360 / (\text{net revenue} / \text{average accounts receivable})$$

- **Operating cycle** - the time period from the moment of purchasing of raw materials to receiving money from the sale of finished products, made from these raw materials

$$\text{Operating cycle, days} = \text{DIO} + \text{DSO}$$

- **Accounts payable period (Days Payable Outstanding, DPO)** - time between receipt of inventory and payment for it.

$$\text{DPO, days} = 360 / (\text{Cost of production sold} / \text{average accounts payable})$$

- **Cash conversion cycle (CCC, financial cycle)** - time between cash disbursement (payment for inventories) and cash collection for finished production.

$$\text{CCC} = \text{DIO} + \text{DSO} - \text{DPO} = \text{Operating cycle} - \text{DPO}$$

Variants of cash conversion (financial) cycle:



$$\text{CCC (cash conversion cycle)} = \text{DIO} + \text{DSO} - \text{DPO}$$

$$\text{CCC} = 20 \text{ days} + 10 \text{ days} - 5 \text{ days} = 25 \text{ days}$$

$$\text{CCC} = 10 \text{ days} + 20 \text{ days} - 5 \text{ days} = 25 \text{ days}$$

$$\text{CCC} = 20 \text{ days} + 10 \text{ days} - 10 \text{ days} = 20 \text{ days}$$

$$\text{CCC} = 20 \text{ days} + 10 \text{ days} - 15 \text{ days} = 15 \text{ days}$$

$$\text{CCC} = 20 \text{ days} + 10 \text{ days} - 30 \text{ days} = 0 \text{ days}$$

$$\text{CCC} = 20 \text{ days} + 10 \text{ days} - 45 \text{ days} = -15 \text{ days}$$

$$\text{CCC of Xiaomi} = 62.7 \text{ days} + 15.4 \text{ days} - 97.9 \text{ days} = -19.8 \text{ days}$$

Operating activity

- International Accounting Standard 7 — Statement of Cash Flows:

operating activities are the main revenue-producing activities of the entity that are not investing or financing activities, so operating cash flows include **cash received from customers for finished production and cash paid to suppliers for inventories, employees, taxes**. Cash flow from operating activities allows to determine to what extent profit from ordinary activities to truly earned money and how money influenced the production of changes in working capital and its components.



Examples of current assets of Xiaomi:



	Note	As of December 31,	
		2021	2020
		RMB'000	RMB'000
Current assets			
Inventories	24	52,397,946	41,670,719
Trade receivables	22	17,985,503	10,161,019
Loan receivables	21	5,109,034	8,919,088
Prepayments and other receivables	23	19,851,884	16,181,520
Bills receivables measured at fair value through other comprehensive income		14,033	200,000
Short-term investments measured at fair value through other comprehensive income	20	710,865	797,456
Short-term investments measured at amortized cost	20	1,597,919	—
Short-term investments measured at fair value through profit or loss	20	29,311,848	22,376,387
Short-term bank deposits	25(c)	31,041,129	17,598,946
Restricted cash	25(b)	4,319,661	3,625,257
Cash and cash equivalents	25(a)	23,511,579	54,752,443
		185,851,401	176,282,835

Examples of inventories of Xiaomi:



Inventories

	As of December 31,	
	2021	2020
	RMB'000	RMB'000
Raw materials	19,314,001	15,684,698
Finished goods	23,934,395	17,909,963
Work in progress	4,627,210	4,135,024
Spare parts	3,896,430	1,967,593
Others	1,957,057	3,199,153
	53,729,093	42,896,431
Less: provision for impairment [Note (a)]	(1,331,147)	(1,225,712)
	52,397,946	41,670,719

Structure of trade receivables of Xiaomi by the term of payment:



	As of December 31,	
	2021	2020
	RMB'000	RMB'000
Trade receivables		
Up to 3 months	15,740,356	9,400,187
3 to 6 months	1,477,059	534,660
6 months to 1 year	652,701	234,844
1 to 2 years	184,058	110,291
Over 2 years	95,306	81,797
	18,149,480	10,361,779

Structure of cash and cash equivalents of Xiaomi by the currency:



Cash and cash equivalents

	As of December 31,	
	2021	2020
	RMB'000	RMB'000
Cash at bank and in hand	16,024,499	33,633,408
Short-term bank deposits with initial terms within three months	7,487,080	21,119,035
	23,511,579	54,752,443

Cash and cash equivalents are denominated in the following currencies:

	As of December 31,	
	2021	2020
	RMB'000	RMB'000
RMB	10,544,501	12,934,190
US\$	7,485,980	36,251,899
INR	2,237,912	4,023,008
EUR	1,196,449	552,036
Others	2,046,737	991,310
	23,511,579	54,752,443

Advantages of current assets:

- high degree of structural transformation, as a result of which they can easily be transformed from one form to another
- quick adaptation to changes in commodity and financial market conditions, easily subject to changes in the process of diversification of operational activities
- high liquidity, if necessary, a significant part of them can be preserved in monetary assets, necessary for the current maintenance of operational activities
- ease of management



Disadvantages of current assets:

- cash, cash equivalents, accounts receivable are subjected to inflation
- temporarily free (excessively formed) current assets practically do not generate profit (except for investments of monetary assets in short-term financial investments),
 - moreover, excess inventories do not generate profit, but also cause additional operating costs for their storage
- inventories are subjected to constant natural losses
- significant part of current assets has a risk of loss due to dishonesty of partners or own personnel
 - Losses due to obsolescence, deterioration, or theft.
 - The opportunity cost of capital on the invested amount



Original value of inventories



Original value of inventories =

- Price of purchase without Value Added Tax +
- cost of services of middlemen +
- Freight charges (cost of transportation) +
- Loading (unloading)+
- Insurance +
- Custom duties + Excise +
- Registration fees +
- Cost of preparation of inventories for production process

Inventory valuation methods:



- Specific identification method - assessment of the value of each individual unit of inventory. This method applies to inventory that is released for special orders and projects, as well as inventory that is not interchangeable. The disadvantage of this method is its high labor intensity, especially in the conditions of a wide nomenclature of stocks
- Weighted average method
- First-in First-out FIFO – inventories, that are the first to arrive and are released into production are valued at first-in cost
- Last-in First-out LIFO - inventories are used in the reverse sequence of their arrival at the enterprise. That is, the inventories that are the first to be released into production are valued at the cost price of the last ones at the time of receipt.

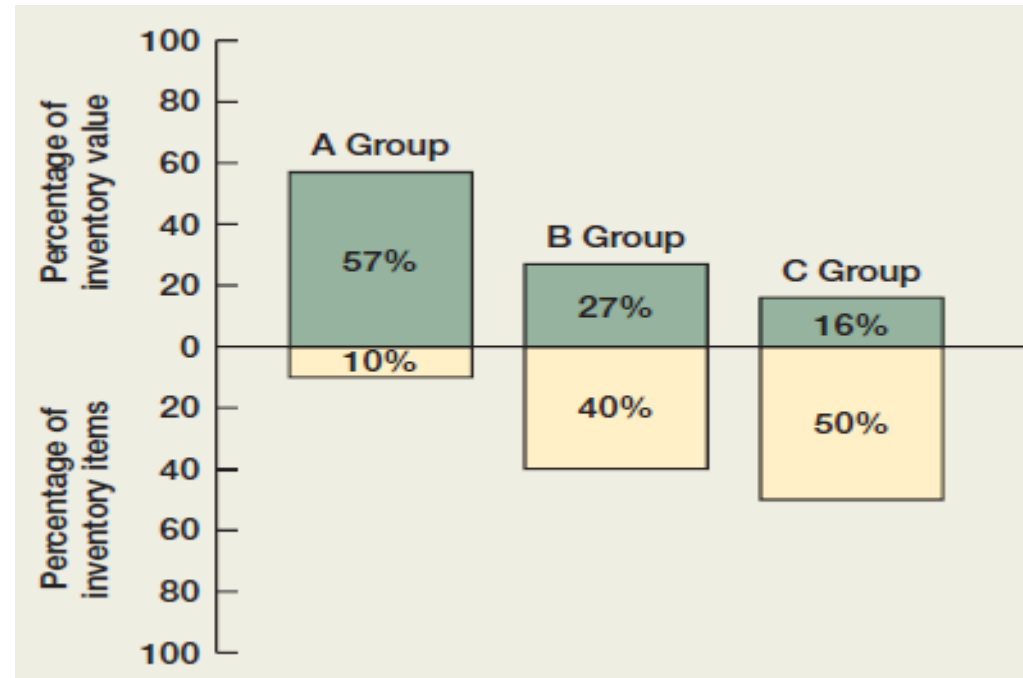
Transportation (shipping, freight) costs:



FOB – free on board:

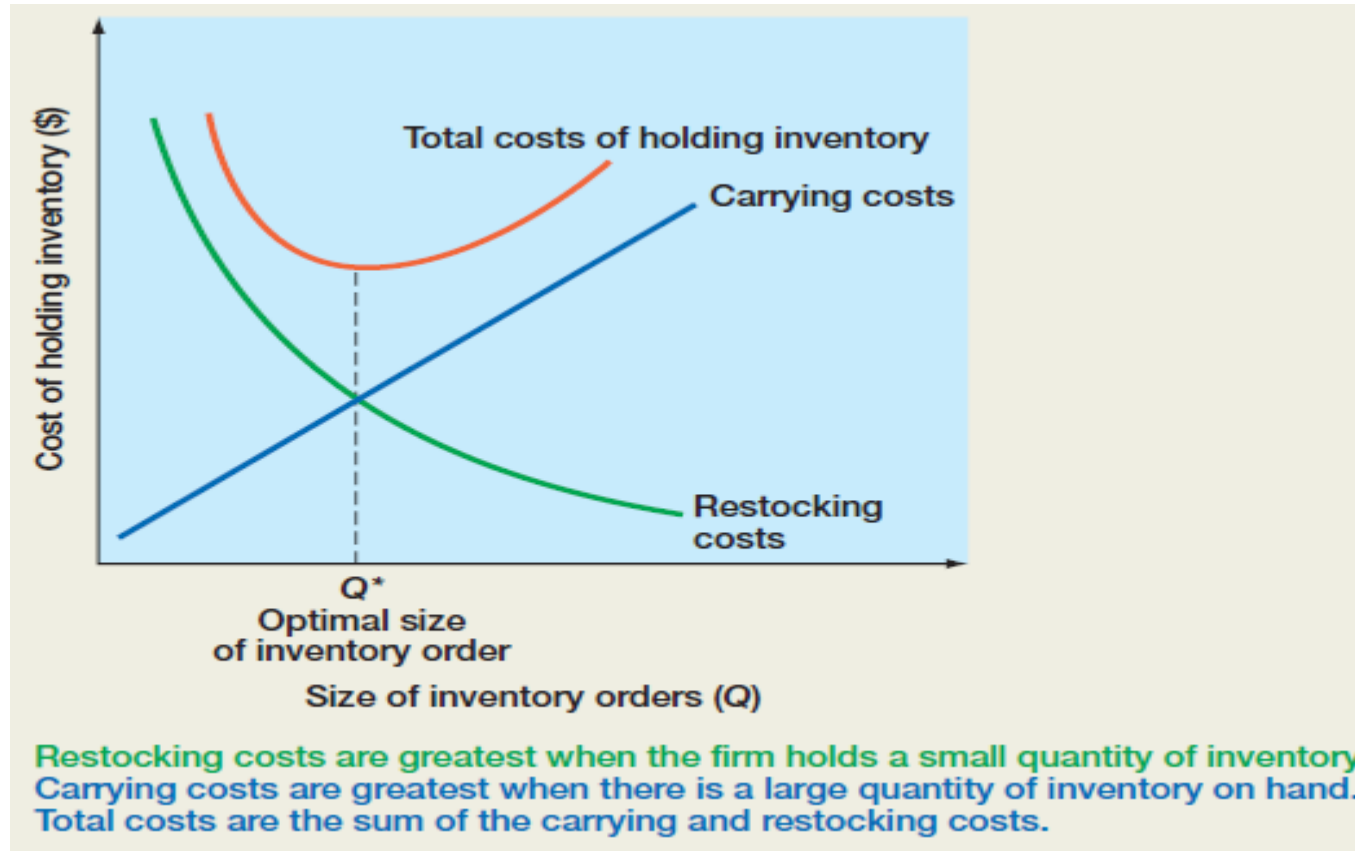
- FOB destination – seller (supplier) delivers production free of any freight charges; destination specified by the buyer; items in transit do not belong to buyer yet, until items reach buyer; items in transit are included in seller's (supplier) balance sheet
- FOB shipping point – buyer must pay transportation charges; items in transit already belong to buyer; items in transit are included in buyer's balance sheet

Optimal inventories: The ABC approach



- A Group constitutes only 10 percent of inventory by item count, but it represents over half of the value of inventory. The A Group items are thus monitored closely, and inventory levels are kept relatively low.
- At the other end, basic inventory items, such as nuts and bolts, also exist; but, because these are crucial and inexpensive, large quantities are ordered and kept on hand. These would be C Group items.
- The B Group is made up of in-between items.

Optimal inventories: The economic order quantity (EOQ) model



Q^* - the restocking quantity that minimizes the total inventory costs

Optimal inventories: The economic order quantity (EOQ) model



- T - total annual sales are 46,800 units
- carrying costs (CC) of \$0.75 per unit per year,
- fixed costs (F) of \$50 per order,
- The restocking quantity Q^* , that minimizes the total inventory costs =

$$\begin{aligned} Q^* &= \sqrt{\frac{2T \times F}{CC}} \\ &= \sqrt{\frac{(2 \times 46,800) \times \$50}{.75}} \\ &= \sqrt{6,240,000} \\ &= 2,498 \text{ units} \end{aligned}$$

Restocking Quantity (Q)	Carrying Costs (Q/2 × CC)	+	Restocking Costs (F × T/Q)	=	Total Costs
500	\$ 187.5		\$4,680.0		\$4,867.5
1,000	375.0		2,340.0		2,715.0
1,500	562.5		1,560.0		2,122.5
2,000	750.0		1,170.0		1,920.0
2,500	937.5		936.0		1,873.5
3,000	1,125.0		780.0		1,905.0
3,500	1,312.5		668.6		1,981.1

Optimal cash balance: The Baumol–Allais–Tobin (BAT) model



- F = The fixed cost of making a securities trade to replenish cash.
- T = The total amount of new cash needed for transaction purposes over the relevant planning period - say, one year.
- R = The opportunity cost of holding cash. This is the interest rate on marketable securities

Example: The Vulcan Corporation has cash outflows of **\$100 per day**, seven days a week. The interest rate is **5%**, and the fixed cost of replenishing cash balances is **\$12 per transaction**. What is the optimal initial cash balance? What is the total cost?

1. The **total cash needed** for the year is $365 \text{ days} * \$100 = \$36,500$.

2. From the BAT model, we have that the **optimal initial balance** is:

$$C^* = \sqrt{(2T * F) / R} = \sqrt{(2 * \$36,500 * \$12) / 0.05} = \$4,186$$

3. The average cash balance is $\$4,186 / 2 = \$2,093$

4. The **opportunity cost** = $\$2,093 * 0.05 = \104.65

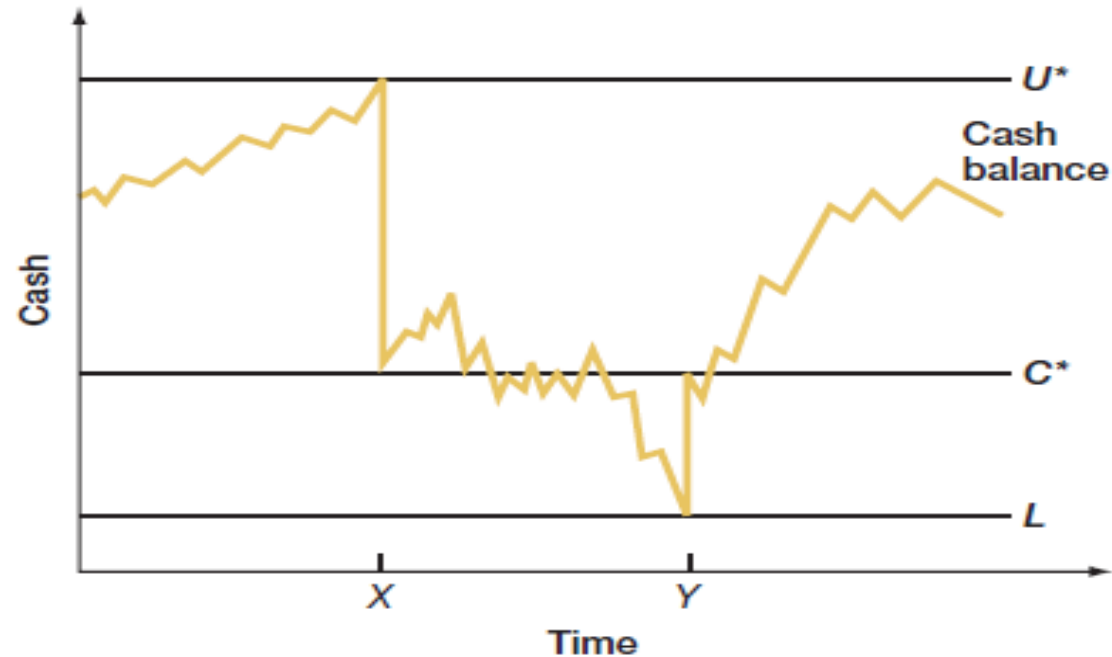
5. Because Vulcan needs \$100 per day, the \$4,186 balance will last $\$4,186 / 100 = 41.86$ days.

6. The firm needs to resupply the account $365 / 41.86 = 8.7$ times per year,

so the **trading (order) cost** = $8.7 \text{ times} * \$12 \text{ per transaction} = \104.4 .

7. The total cost = The opportunity cost $\$104.65$ + Trading (order) cost $\$104.4 = \209.05 .

Optimal cash balance: The Miller–Orr Model



- U^* is the upper control limit. L is the lower control limit. The target cash balance is C^* .
- The firm allows its cash balance to wander around between the lower and upper limits.
- When the cash balance reaches the upper limit (U^*), as it does at point X , the firm moves $U^* - C^*$ dollars out of the account and into marketable securities. This action moves the cash balance down to C^* .
- In the same way, if the cash balance falls to the lower limit (L), as it does at point Y , the firm will sell $C^* - L$ worth of securities and deposit the cash in the account. This action takes the cash balance up to C^* .

Optimal cash balance: The Miller–Orr Model



- Given F (the fixed cost of making a securities trade to replenish cash), R (the opportunity cost of holding cash. This is the interest rate on marketable securities), L (the lower control limit of cash), which is set by the firm, Miller and Orr show that the cash balance target, C^* , and the upper limit, U^* , that minimize the total costs of holding cash are:

$$C^* = L + (3/4 \times F \times \sigma^2 / R)^{1/3}$$

$$U^* = 3 \times C^* - 2 \times L$$

- Also, the average cash balance = $(4 * C^* - L) / 3$

For example, suppose $F = \$10$, the interest rate is 1% per month, minimum cash balance of $L = \$100$ and the standard deviation of the monthly net cash flows is \$200.

The variance of the monthly net cash flows = $\sigma^2 = \$200^2 = \$40,000$

- cash balance target =

$$\begin{aligned} C^* &= L + (3/4 \times F \times \sigma^2 / R)^{1/3} \\ &= \$100 + (3/4 \times 10 \times 40,000 / .01)^{1/3} \\ &= \$100 + 30,000,000^{1/3} \\ &= \$100 + 311 = \$411 \end{aligned}$$

The upper limit, U^* , is thus:

$$\begin{aligned} U^* &= 3 \times C^* - 2 \times L \\ &= 3 \times \$411 - 2 \times 100 \\ &= \$1,033 \end{aligned}$$

Finally, the average cash balance will be:

$$\begin{aligned} \text{Average cash balance} &= (4 \times C^* - L) / 3 \\ &= (4 \times \$411 - 100) / 3 \\ &= \$515 \end{aligned}$$

Ways to minimize the operating cycle:



- determine the required amount of inventory the volume of spending (production) item per day must be multiplied on rate (as days for delivery, documentation, discharge, storage of materials, preparing them for production etc.).
- Monitoring of inventories in warehouses will timely detect surplus that can be sold and will lead to increasing of other operating income of a company.
- There are specialized middlemen that deal with information collection about the remains of materials in different companies and find potential buyers for them. Such materials can be bought at discounted prices, which is beneficial and reduces costs for customers.
- consolidation of warehouses for the following particular products; planning of time and volume of material use to avoid excess purchase; clear specification of materials and components in production
- Implementation of new resource-saving technologies, which will minimize spoilage of raw materials, focus on waste-free production or recycling of production waste
- production flexibility, when some tools (equipment, production line) can be quickly replaced by others in market demand;
- effective system of receiving and unloading materials; staff motivation in the implementation of such recommendations
- Company has to review its assortment of finished products and goods to determine top positions, because focusing on them and avoiding others can often increase business efficiency
- increasing sales depends on marketing policy of a company, advertising, promotions, discount schemes, after-sale customer service

Ways to minimize the operating cycle:



- avoid mediation between suppliers and direct consumers of raw materials, which will help reducing transaction errors and costs and would provide better control over prices
- guaranteed sales agreements – arrangement under which a manufacturer or a supplier takes back goods that remain unsold after a specified period
- consignment agreements (sale or return, or goods on consignment) – a trading arrangement in which a seller sends goods to a buyer or reseller who pays the seller only when goods are sold. The seller remains the owner (title holder) of the goods until they are paid for in full and, after a certain period, takes back the unsold. It is profitable, because one side does not spend money for shop, realty, and another side of agreement – for buying products, only allocating them on its territory for payment.
- To shortage the operating cycle a company may pass sales function for outsourcing to specialized firms or sell their products wholesale to small commercial agents, dealers, who will deal with retail customers
- practice of production and supply on the principles of "just-in-time“, when suppliers ship raw materials at a certain time in the required amount directly to the workplace
- electronic commerce, that can help: attract buyers from around the world, offer the widest range of products, out sales staff, avoid goods' excess, accelerate the date of payment, create and manage an electronic database of customers and suppliers
- system of discounts to customers for early payment; analysis of customer payment history and credit policy adjustments in this regard;
- automation of collection of accounts receivable; differentiation accounts receivable by amount; early billing of customers under long-term cooperation agreement;

Ways to minimize the operating cycle:

- changing in conditions of commission payment to staff, when salary does not depend on sales, but on the volume of cash inflows from customers
- advanced forms of payment in relations between suppliers and buyers. use of such documents as: payment request-orders, settlement check, letter of credit
- acquiring –technological, information service of transactions carried out using electronic means of payment in the payment system – is also one of the major tools to strengthen the payment discipline of enterprises
- operation of purchase-sale may be executed by a promissory note. The advantages for the supplier in this case are the abilities: to discount it at a bank, to pay partners with its help, to take a credit with a promissory note as a pledge, to receive debts back guaranteed in case of buyer's bankruptcy etc.
- factoring service (forfeiting) – transfer the right of firm's debt collection to a bank (factoring company) in order to receive credit for current activity financing.
- In the extreme case supplier can apply to the Commercial Court with a claim for enforcement of debts returning from the buyer or start a bankruptcy procedure.
- In case of contract violation and failure to pay for delivered products, the supplier is entitled to a reduction of income tax by writing off the costs of doubtful (hopeless) debts that are calculated and confirmed appropriately under domestic legislation



Sources for current assets financing:

- Net working capital = Equity + Long-term debts – Fixed assets **or**

Net working capital = Current assets – Current liabilities

- Trade payable
- Other accounts payable
- Consignment
- Factoring
- Short-term bank credit
- Other current liabilities
- Profit, Equity





Thank you for your attention!
