CORPORATE FINANCE

Part I. FINANCIAL ANALYSIS AND FORECASTING

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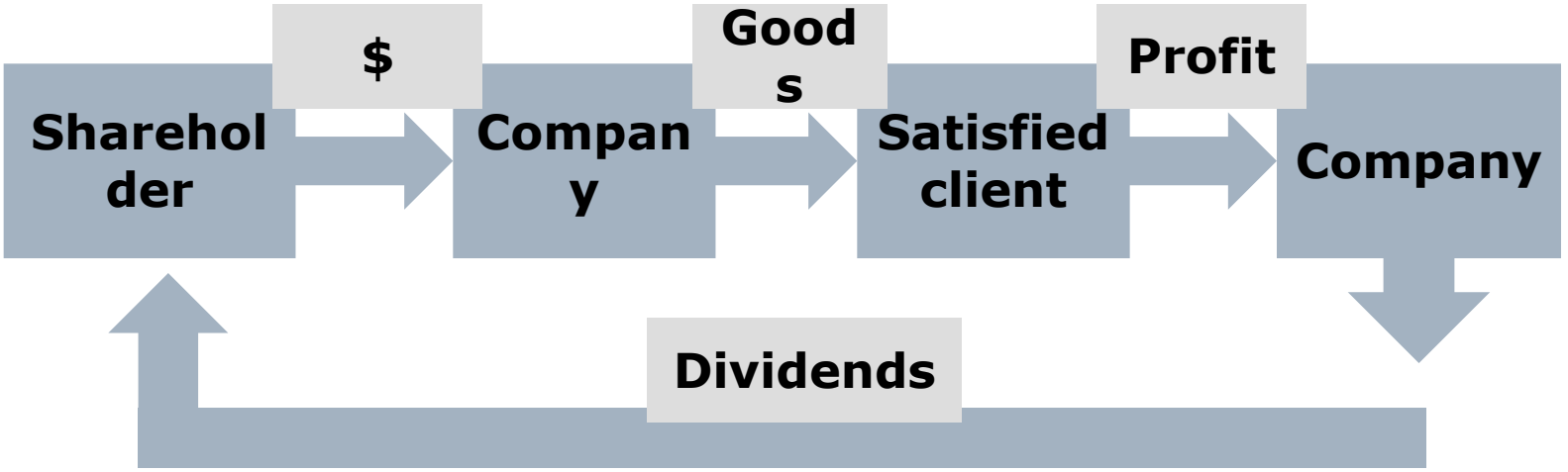
INTRODUCTION

FINANCIAL MODEL OF A COMPANY

Objectives of a company

- Shareholders' wealth maximization



Objectives of a company

- Stakeholders' income increase:
  - Shareholders
  - Employees
  - Managers
  - Suppliers
  - Clients
  - Society

Functions of a financial manager

- Activity spheres of a financial manager:
  - *Strategic management* – general objectives and long-term planning
  - *Operational management* – everyday management
  - *Risk management* – ways to minimize impact of unfortunate events and maximize the realization of opportunities

Functions of a financial manager

Functions of a financial manager

- Key objectives of a financial manager
  - Financial planning
  - Assessment of investment projects
  - Decisions on financing
  - Operations on capital markets
  - Financial control

Financial structure of the company

- **Financial structure** is a hierarchical system of financial responsibility centres (FRC) which define the order of financial results forming and responsibility distribution to achieve one common objective of a company.

Financial structure of the company

- Financial responsibility centers (FRC):
  - Cost center (CC)
  - Revenue center (RC)
  - Marginal revenue center (MRC)
  - Profit center (PC)
  - Investment center (IC)

Financial structure of the company

FRC	Objectives	Can include	Can be included into
CC	Expenses	CC	CC, PC
RC	Revenue	RC	PC
MRC	Profit of a business	CC, RC	MRC, PC
PC	Profit of the company	PC, MRC, CC, RC	PC, IC
IC	ROI	PC, CC, IC	IC

Financial structure of the company

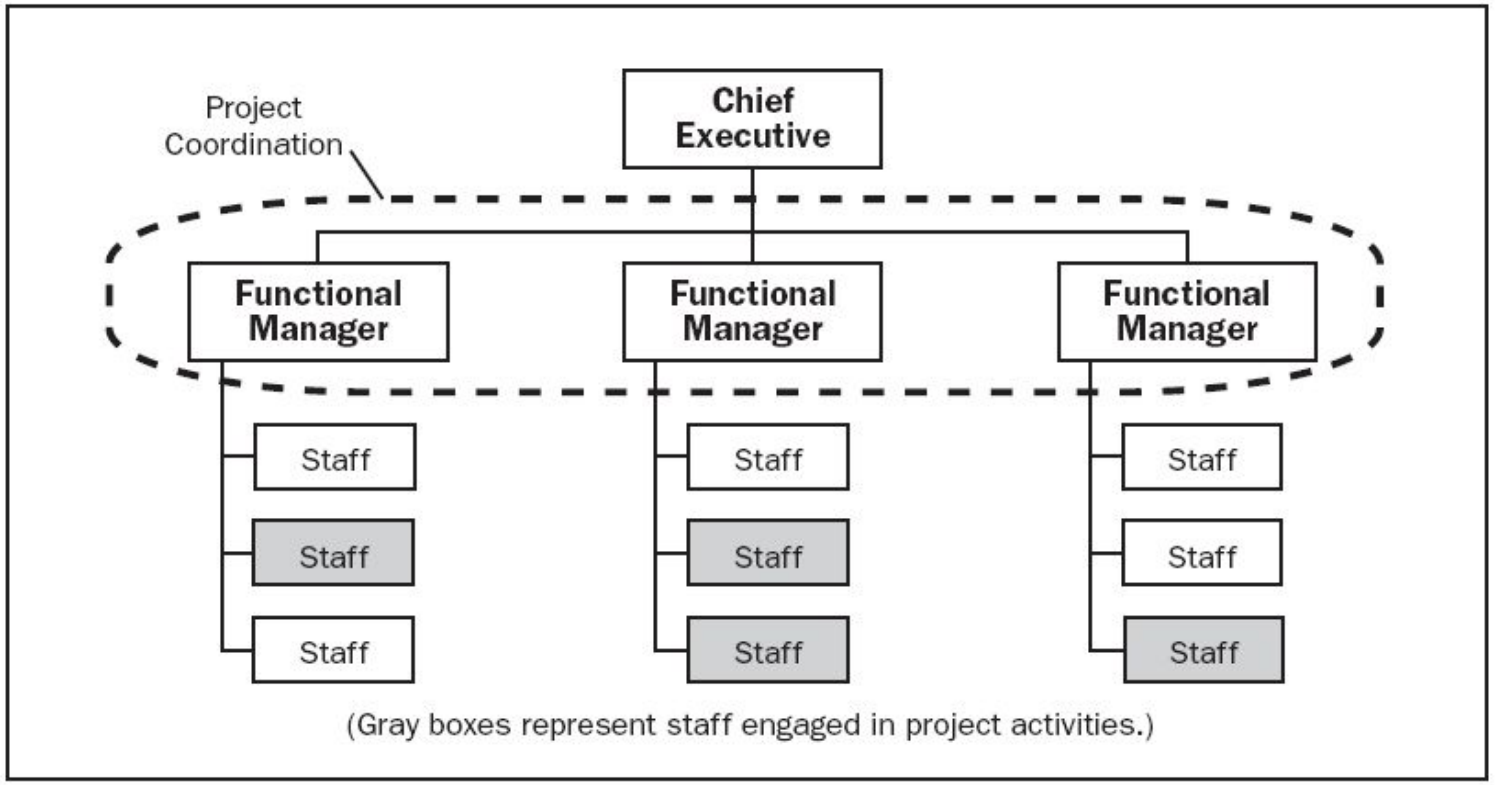
- How to from a financial structure:
  1. **Organizational approach**
  2. **Process approach**
  3. Define investment activities
  4. Define assets
  5. Define a profit structure
  6. Outline the main managerial relationships

Organizational approach

- An **organizational structure** is a mainly hierarchical concept of subordination of entities that collaborate and contribute to serve one common aim. *(Wikipedia)*

Organizational approach

- Functional organization



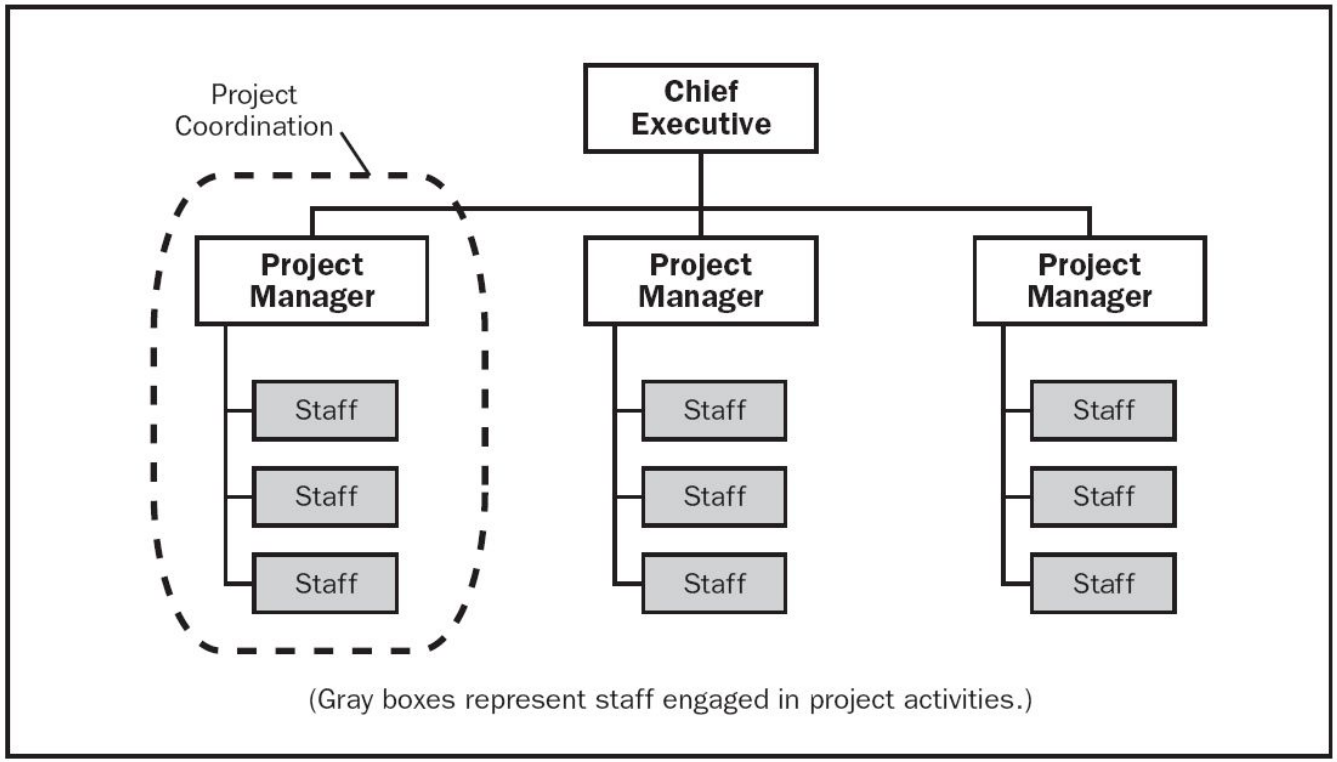
Organizational approach

- Functional organization

Advantages	Disadvantages
Easier personnel management	Employees fulfill their usual functions to the detriment of innovative and project work
Each employee has one clear superior	
Staff members are grouped by specialty	No horizontal connections between departments
Clear career perspectives	

Organizational approach

- Projectized organization



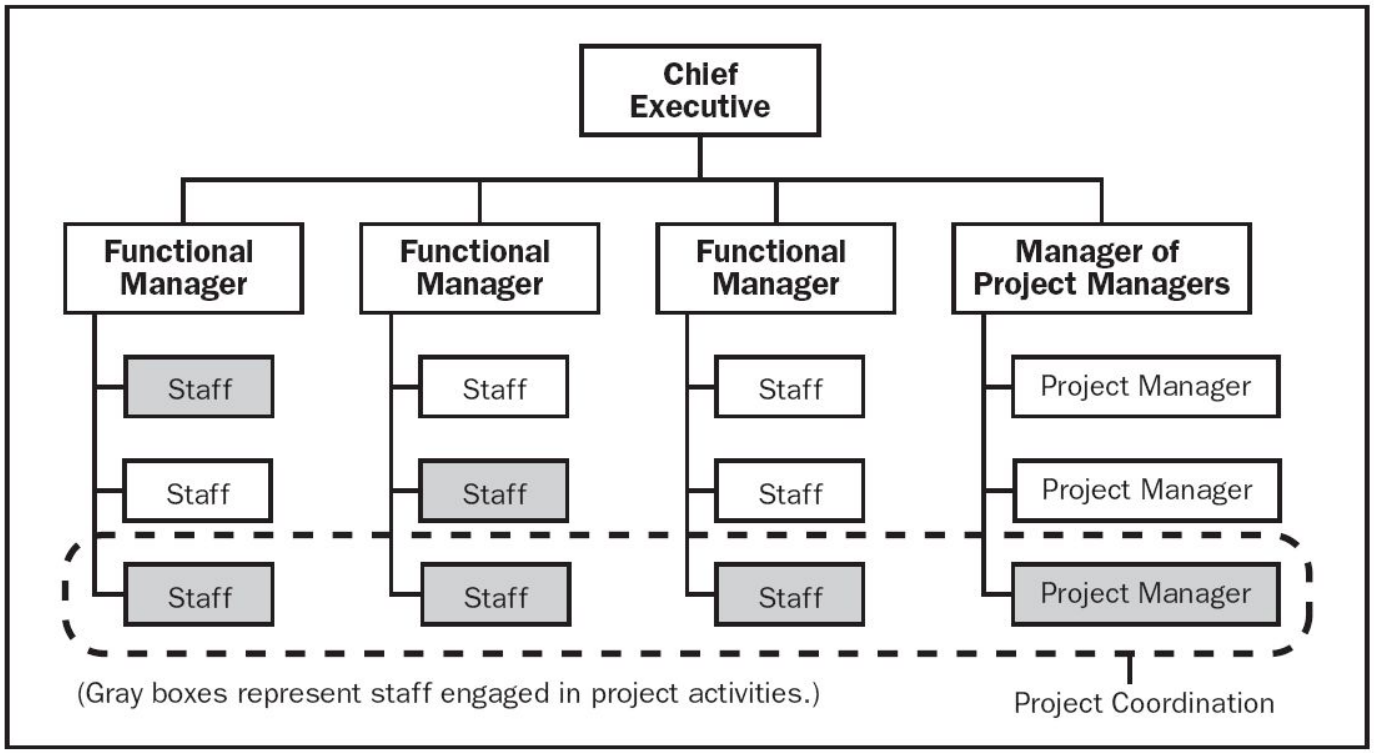
Organizational approach

- Projectized organization

Advantages	Disadvantages
Effective project work	A project looses its “house” when it is closed
Loyalty to a project	Less competence in different spheres
Effective communications	Double functions and means
	Less effective resources allocation

Organizational approach

- Matrix organization



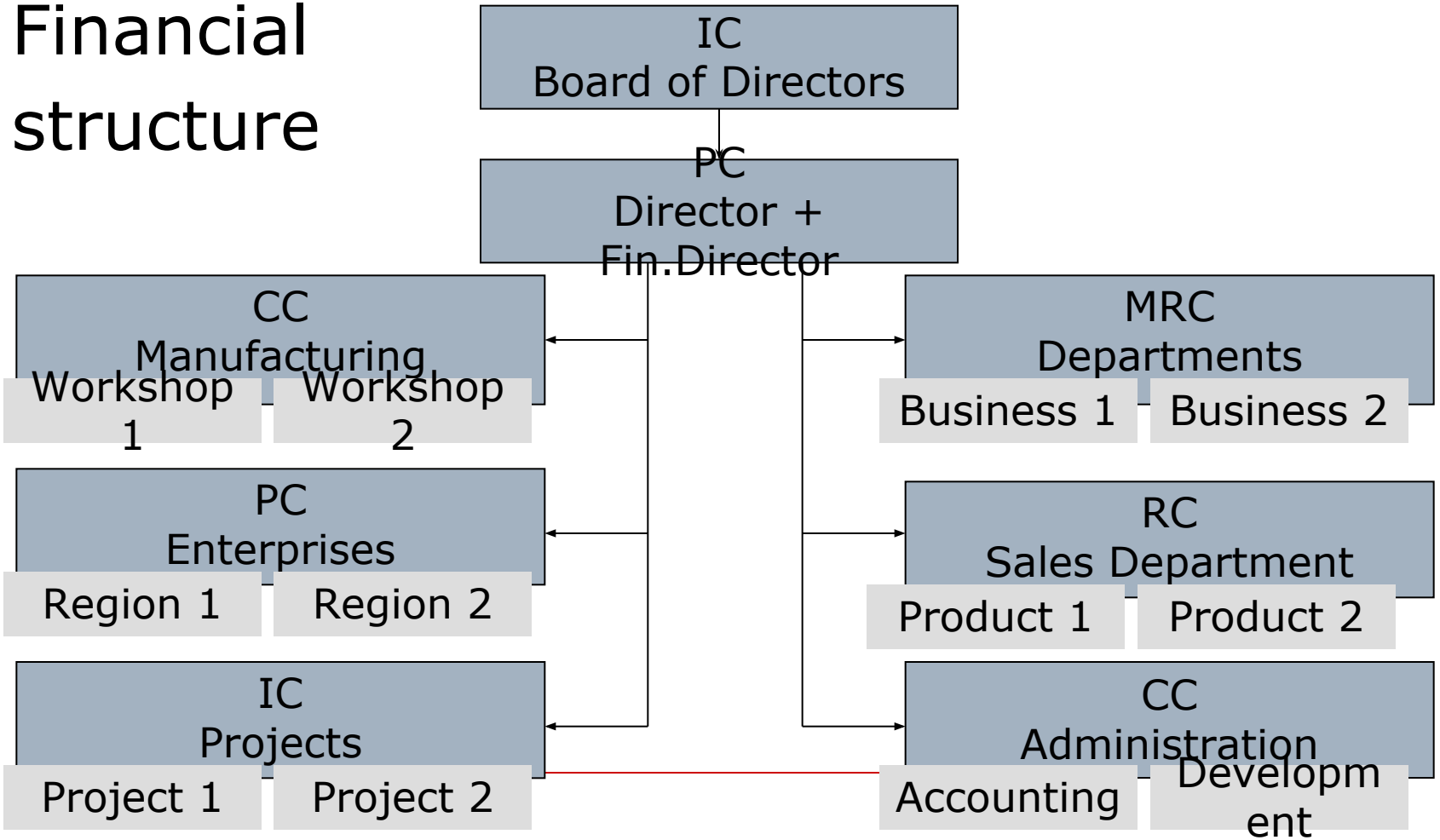
Organizational approach

- Matrix organization

Advantages	Disadvantages
Clear project objectives	Higher administr. costs
Better resources control	More than one superiors
Better coordination	Difficult to control
Project team has its "house"	More agreements and procedures
Better vertical and horizontal distribution of the information	Different priorities of functional and project managers
	Possible conflicts and double work

Organizational approach

Financial structure



Organizational approach

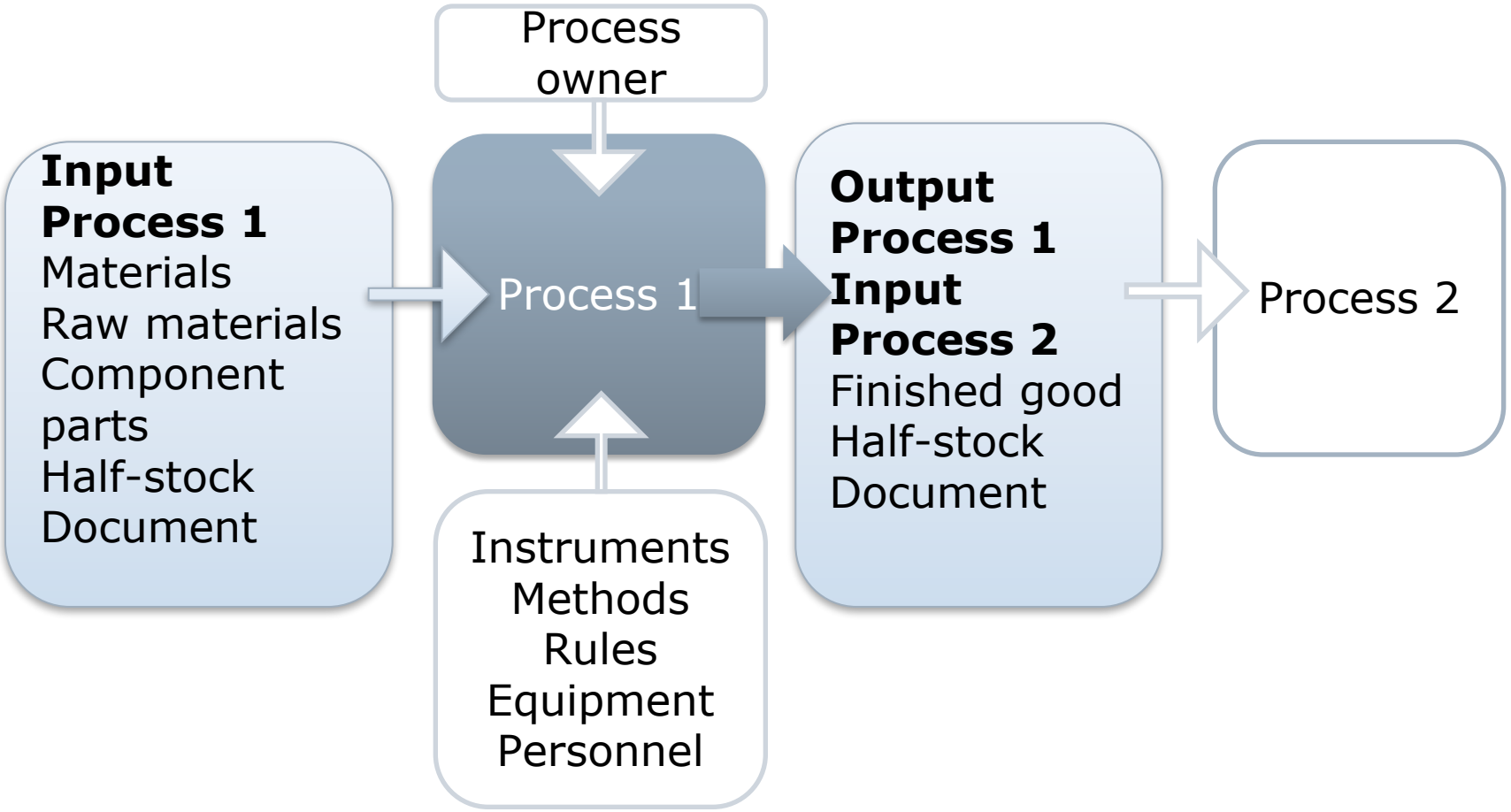
- Differences between organizational and financial structures

Organizational structure	**Financial structure**
Based on functional specialization of departments	Based on economic & financial relationships
Hierarchy of subordination	Hierarchy of financial responsibility
Possible personal factors	Real business factors

Process approach

- A **process** is an activity which transforms input into output.
- A **business process** is an activity that uses specific resources to produce a specific service or product for a particular customer.

Process scheme

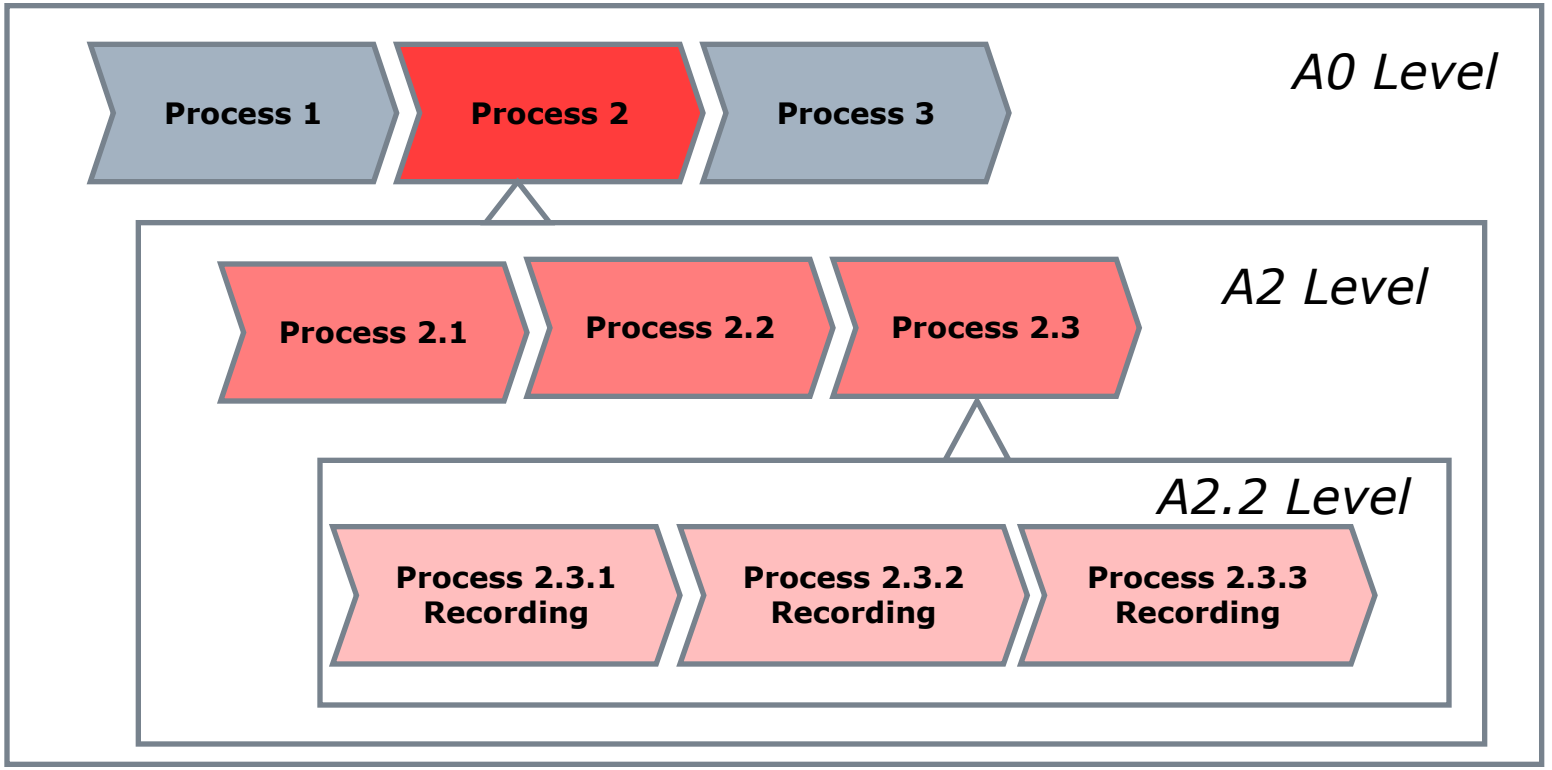


Process approach

- Business-process types:
  - Main
  - Supporting
  - Development
  - Corporate management

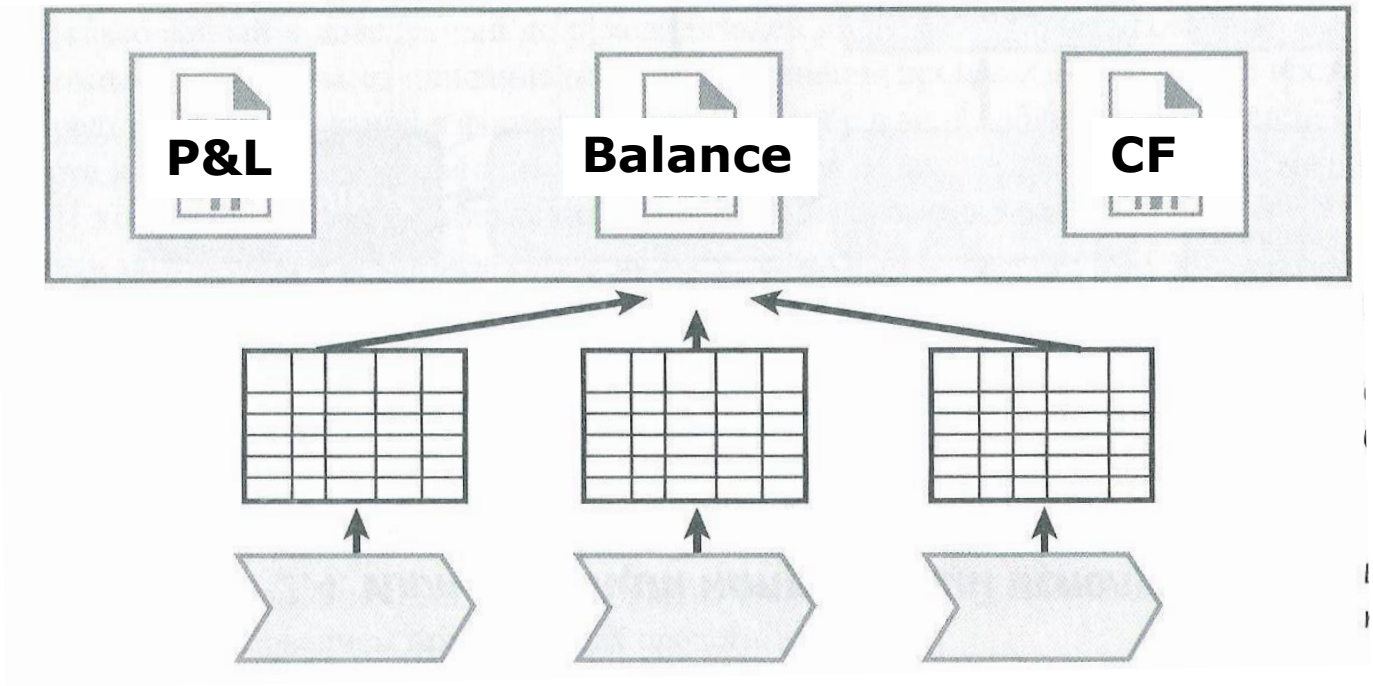
Process approach

- Process decomposition



Process approach

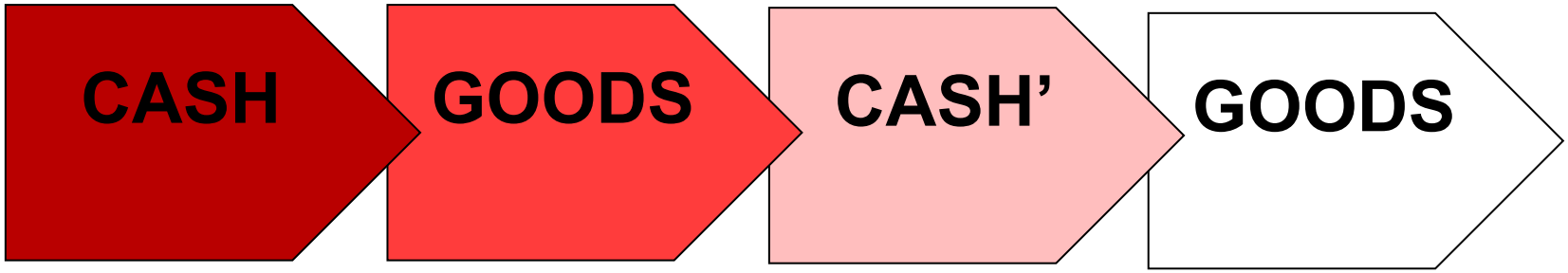
- Business process and budgets



BASIC PRINCIPLES OF FINANCIAL MANAGEMENT

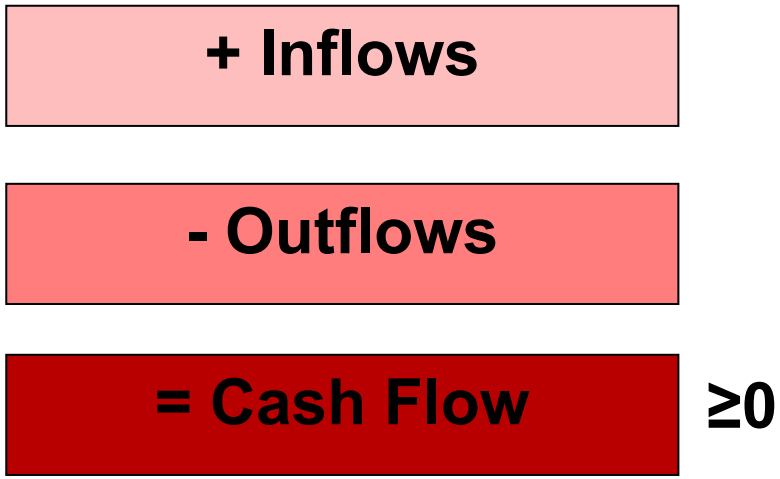
Concept of cash flows

- Cash turnover concept



Concept of cash flows

- **Cash flow** - the movement of cash into or out of a business, a project, or a financial product during a specified, finite period of time.



Relationship between risk & profit

- Nothing ventured, nothing gained
- Britain's Special Air Service motto: Who dares, wins
- The higher profits are usually connected with the higher risk

ACCOUNTING SYSTEMS

Bookkeeping, financial & management accounting

- **Bookkeeping** is the recording of day-to-day financial transactions (purchase, sales, receipts, and payments)
- **Financial accounting** concerned with the preparation of financial statements for decision makers (stockholders, suppliers, banks, employees, government agencies, owners, and other stakeholders)
- **Management accounting** provides managers of the company with the essential internal data to direct and control the company's activity

Bookkeeping, financial & management accounting

	Bookkeeping	Financial accounting	Management accounting
Users	Internal, external	Internal, external	Internal
Objectives	Ongoing accounting of all company's operations	Accounting of finances movement Financial statements	Internal analysis of production costs and benefits

Financial reporting standards used in Russia

- **Russian Accounting Standards (RAS)** – accounting standards issued by the Russian Ministry of Finance; obligatory in Russia.
- **International Financial Reporting Standards (IFRS)** – standards adopted by the International Accounting Standards Board (IASB)
- **Generally Accepted Accounting Principles (GAAP)** - accounting rules used to prepare, present, and report financial statements in the US.

Financial reporting standards used in Russia

- Differences between RAS and IFRS

RAS	IFRS
strict regulation of all actions, common card of accounts	concepts based
authorities oriented	stakeholders oriented
no information about associated companies	reports of holdings are consolidated

Financial reporting standards used in Russia

- Main concepts of the IFRS:
  - accrual basis
  - going concern
  - individual evaluation concept
  - conservatism
  - matching
  - substance over form

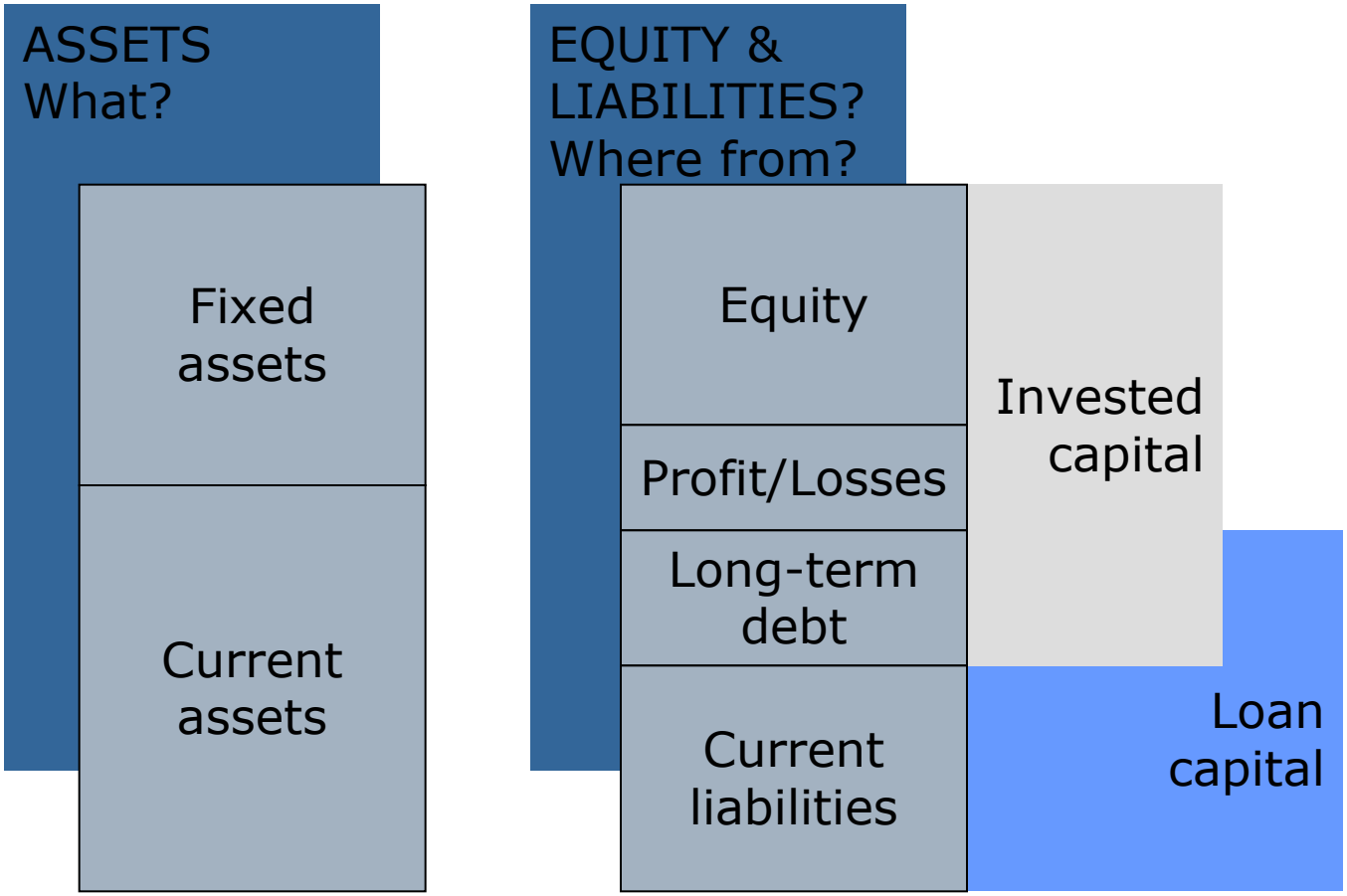
FINANCIAL STATEMENTS

Annual reports

What cash movements were present during the period?	**Cash Flow Statement**
What earnings does a company generate during the period?	**Income Statement**
How much material values did a company accumulated and what are the sources of forming?	**Balance Sheet**

BALANCE SHEET

Structure of assets & liabilities



Structure of assets & liabilities

- Balance equation

Total Assets = Total Liabilities & Equity
= FA + CA = IC + CL = E + P/L +LC

Structure of assets & liabilities

- Fixed assets:
  - land
  - plant & equipment
  - transport
  - long-term financial investments
  - license
  - good-will

Structure of assets & liabilities

- Current assets:
  - cash
  - inventories
  - work-in-process
  - accounts receivable
  - short-term financial investments
  - pre-paid expenditures

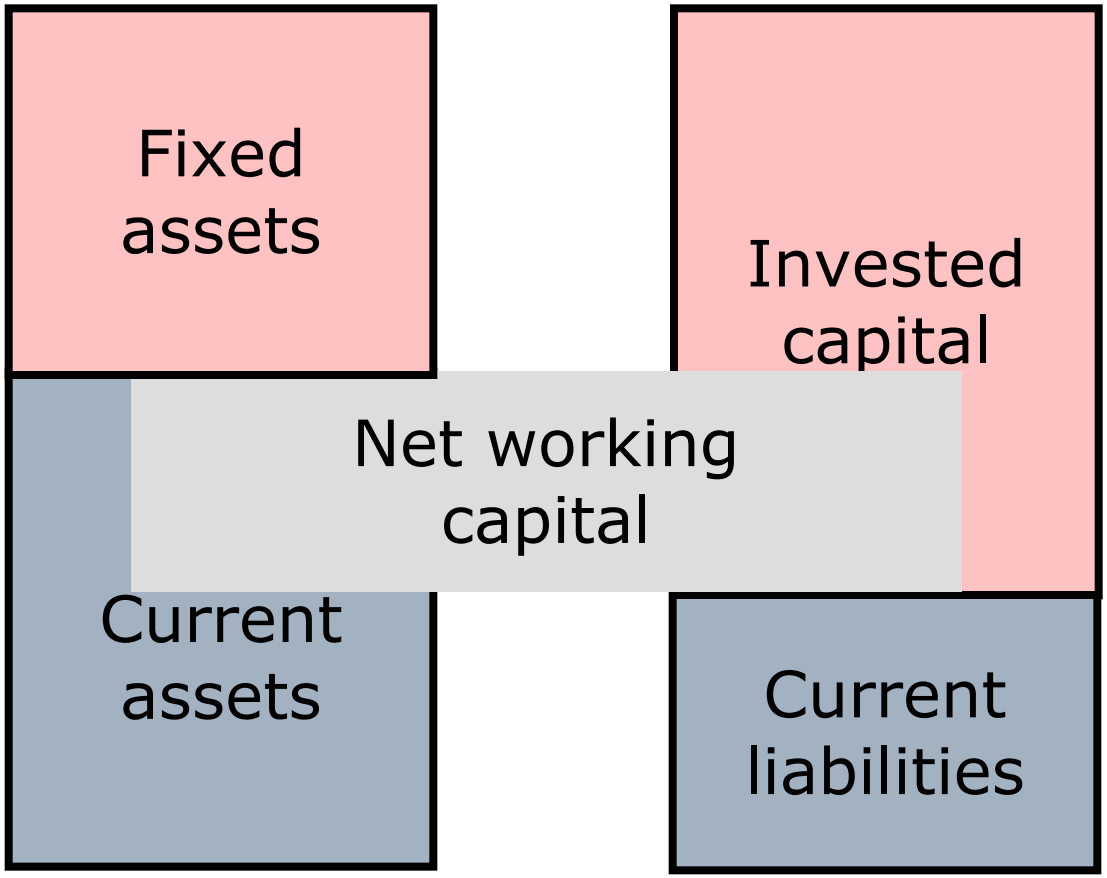
Structure of assets & liabilities

- Equity:
  - shareholders' equity
  - retained earnings
  - additional capital
  - reserves

Structure of assets & liabilities

- Loan capital:
  - long-term liabilities (longer than 12 months)
  - short-term liabilities
    - loans & credits
    - liabilities to suppliers
    - liabilities to employees
    - taxes to be paid
    - future earnings

Net working capital



Net working capital

- **NWC = CA – CL = IC – FA**
- Represents operating liquidity available to a business
- Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses.

INCOME STATEMENT

Income statement

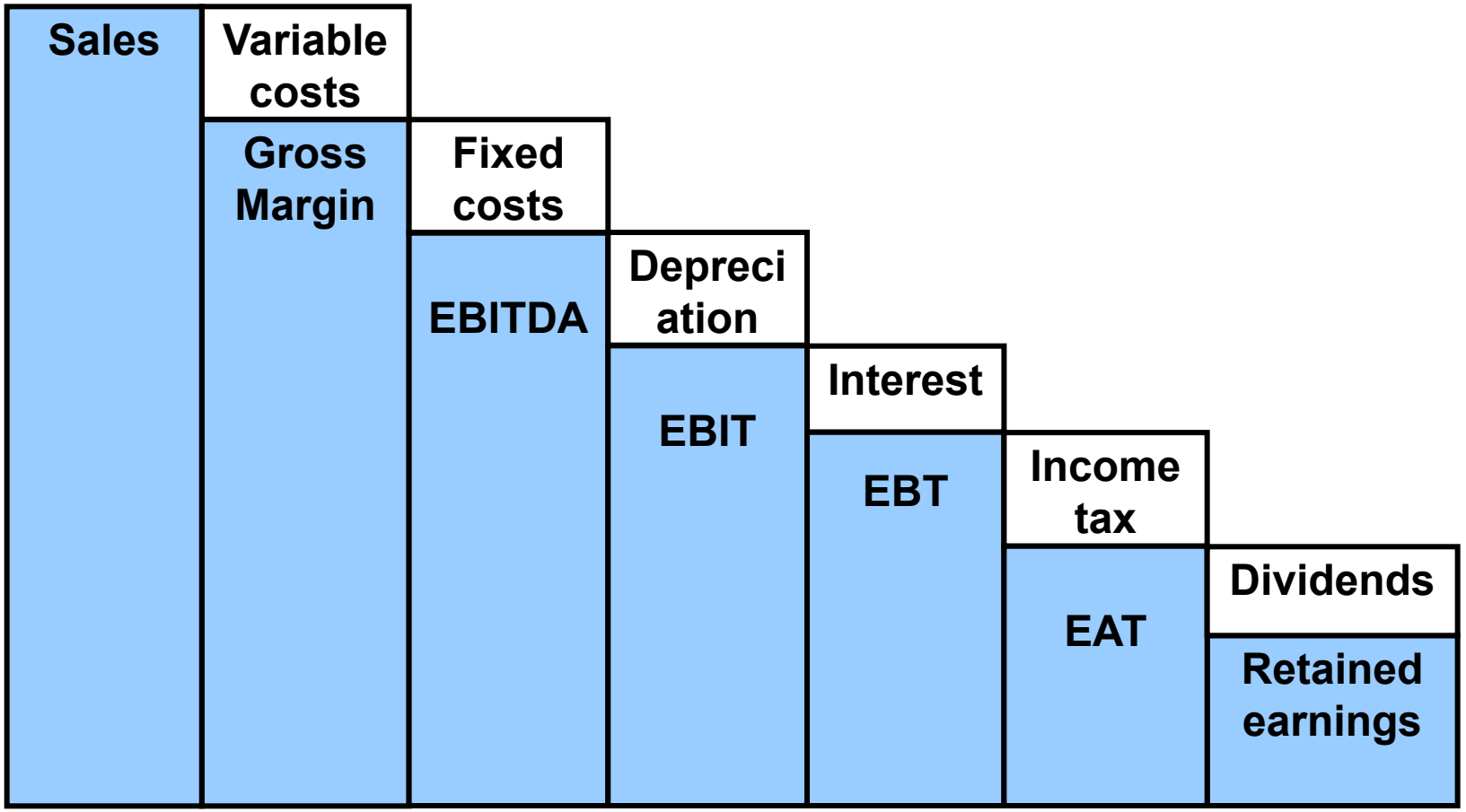
- Receipts:
  - Sales
  - Interests
  - Payments for services
  - Rent …
- Disbursements:
  - Cost of sales
  - Salaries & wages
  - Rent
  - Equipment maintenance
  - Insurance
  - Office
  - Communication means
  - Operating expenses…

Profit =

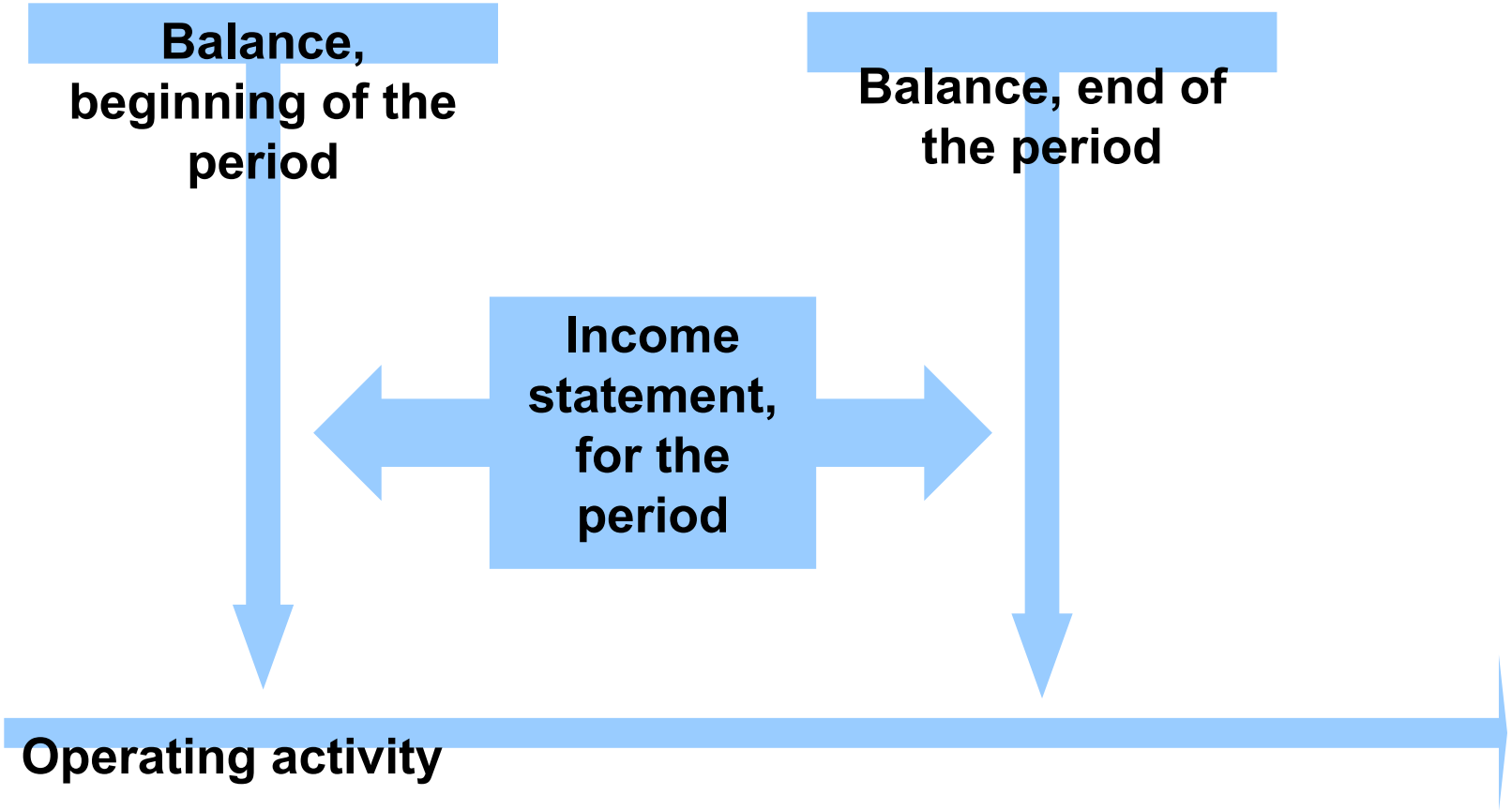
Receipts –

Disbursements

Income statement



Balance sheet & income statement



Balance sheet & income statement

Assets = Equity + (-) Profit (Loss) + Liabilities

Assets = Equity + (Receipts – Disbursements) + Liabilities

STATEMENT OF CASH FLOWS

Cash flow statement

- Operating activities:
  - \+ Cash received from customers
  - – Cash paid to suppliers and employees
  - – Operating expenses
  - – Securities
  - \+ Interest received
  - – Interest paid
  - – Income tax paid
- = Cash flow provided (used) by operating activities

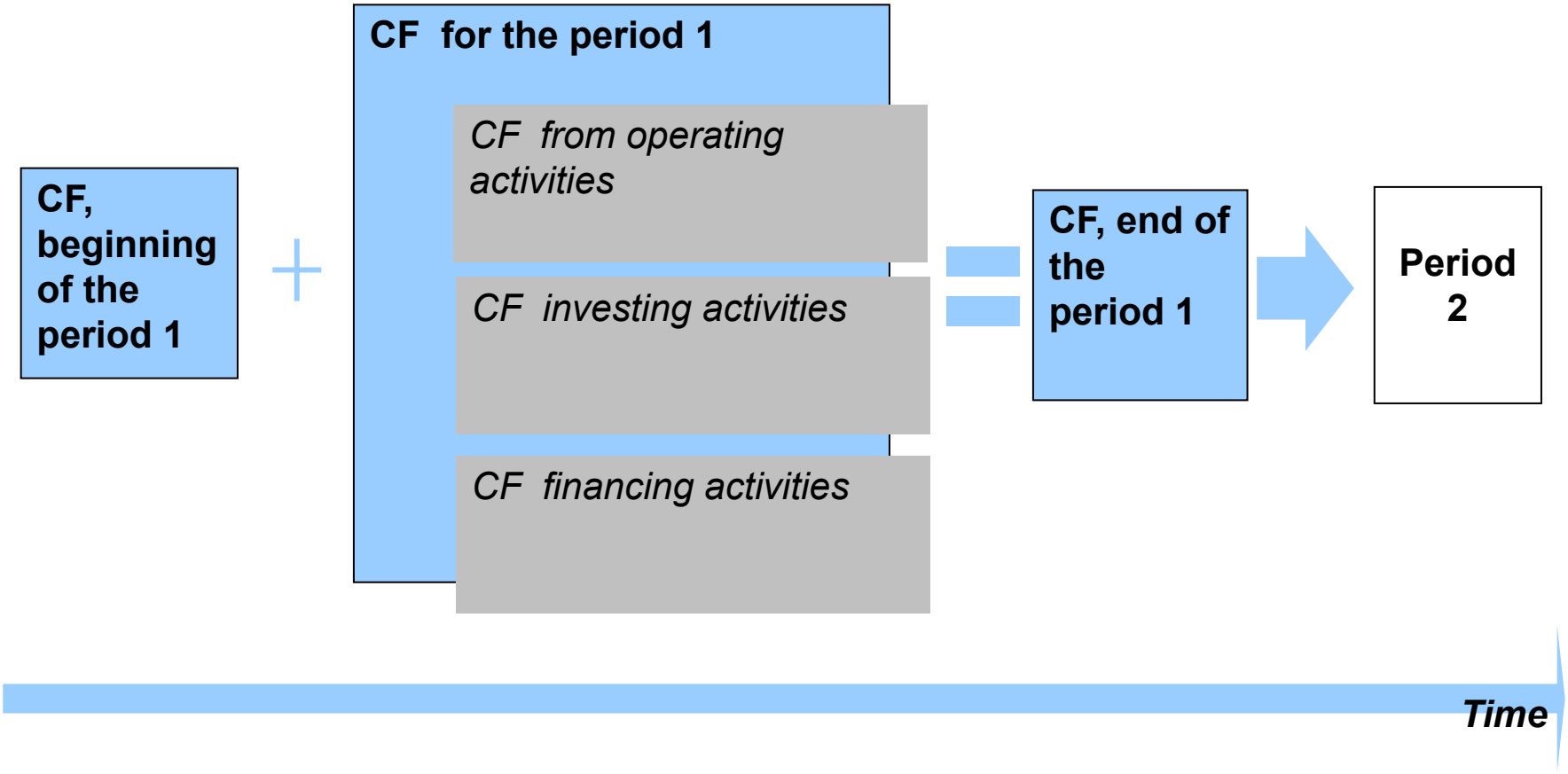
Cash flow statement

- Investing activities
  - \+ Proceeds from sales of assets
  - – Capital expenditures
  - – Shares acquisition
  - \+ Proceeds from sales of shares
  - \+ Proceeds from investing activities (dividends, interests)
- = Cash flow provided (used) by investing activities

Cash flow statement

- Financing activities
  - \+ Equity
  - \+ Loans
  - \+ Proceeds from issuance of long-term debt
  - – Repayment of loans
  - – Interest payments
  - – Leasing payments
  - – Dividend payments
- = Cash flow provided (used) by financing activities

Cash flow statement



Cash flow statement

- Methods of representing cash flows from operating activities:
  - *Direct* - all the inflows and outflows are calculated using accrual method
  - *Indirect* - adjusting net income to reconcile it to net cash flow from operating activities

Cash flow statement

- Steps of the indirect method:
  1. Add back noncash expenses, primarily depreciation / Subtract noncash earnings
  2. Show increases/decreases in current asset and current liability accounts
  3. Calculate cash flow from operating activities

Cash flow statement

- Signs for adjustments (indirect method)
  - – ☐ Current assets
  - – ☐ Current liabilities
  - – Noncash earnings
  - + ☐ Current assets
  - + ☐ Current liabilities
  - + Noncash expenses

Cash flow statement

- Differences between EAT and CF:
  1. EAT show economic effectiveness of sales, don't concern payments spread in time
     - CF shows real in- and outflows during the period
  2. EAT exclude VAT
     - CF shows VAT
  3. EAT includes depreciation as a disbursement
     - CF exclude depreciation as an outflow
  4. Income statement concerns only operating activities
     - Statement of cash flows concerns all the types of the company's activities

FINANCIAL ANALYSIS

BASIC PRINCIPLES

Financial ratios

- A **financial ratio** is a relationship that indicates something about a firm's activities and enables an analyst to make a comparison of a firm financial condition over time or in relation to other firms.

Financial ratios

- Successful financial ratio analysis:
  - Requires only representative sample of possible ratios
  - A financial ratio is meaningful only in comparison to some standard or tendency
  - While comparing to another firm remember about possible differences in accounting techniques and ratios names.

Financial ratios

- Advantages of financial ratios:
  - Possible to compare companies and projects of different sizes
  - Just several ratios can provide a relatively full information about the performance of the company
  - Show relationship between earnings, disbursements, assets, equity and liabilities
  - Easy to calculate

Financial ratios

- Disadvantages of financial ratios:
  - Strongly depend on accuracy of reports
  - Don’t analyze absolute values of sales, profit, used capital
  - Difficult to find a standard or a base for comparison
  - Ratios based on annual reports don’t show the company’s performance during the year
  - Don’t consider sudden changes on the market or inflation

Financial ratios

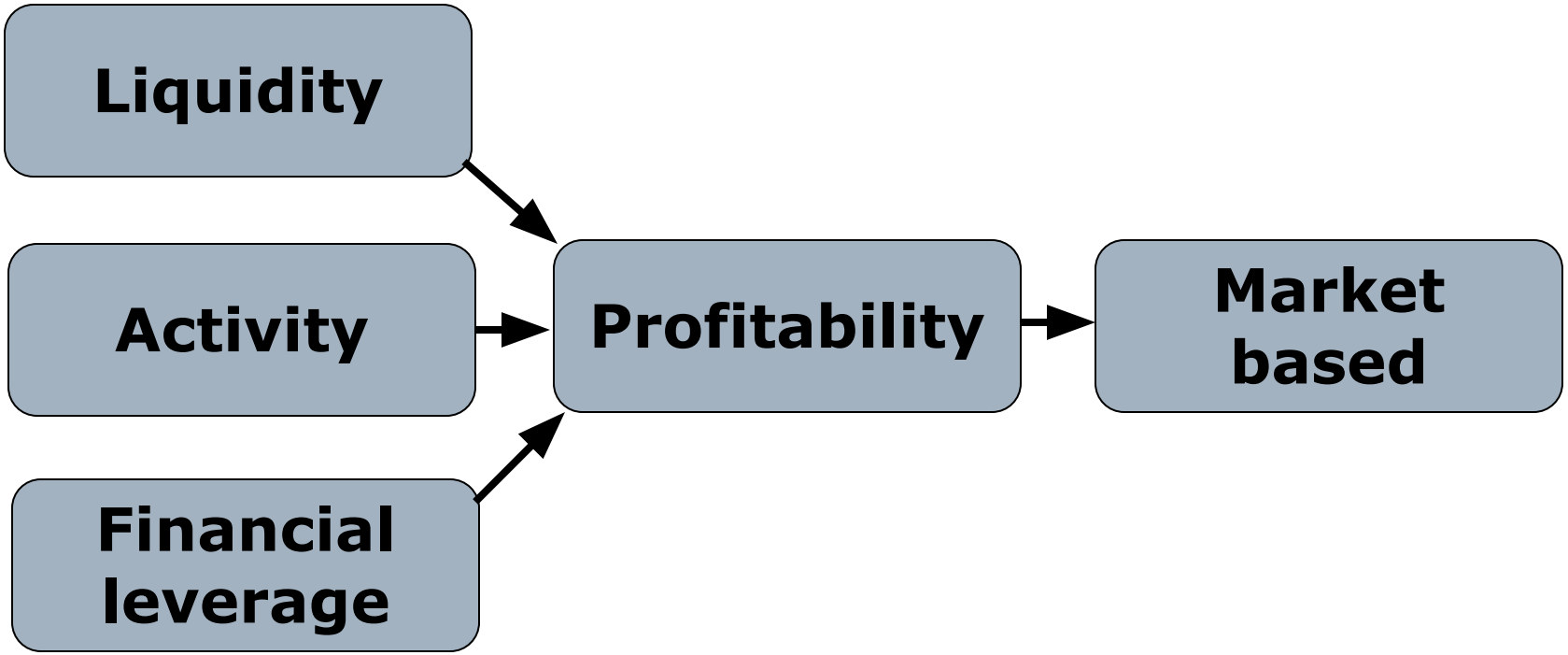
- Users of financial analysis results:

Users	Interest
Suppliers and short-term creditors	current liquidity, near-term cash-generating capacity
Bond holders and holders of preferred stock	Earnings, assets, cash-generating capacity over the long run, claims other investors have on the firm's cash-flows
Common stockholders and potential investors	profitability and risk
Management	all aspects of financial analysis on both short- and long-term basis

FIVE GROUPS OF FINANCIAL RAIOS

Financial ratios

- Five groups of financial ratios



Liquidity ratios

- **Liquidity ratios** indicate a firm's ability to meet short-term financial obligations.
  - ***Current ratio=Current assets / Current liabilities***
    >2
  - ***Quick ratio=(Current assets-Inventories) / Current liabilities***
    >0.9-1.0

Liquidity ratios

- Aging schedule

Days outstanding	Amount outstanding, $	Percentage of total, %
Less than 30	9450	51.6
30-59	5161	28.2
60-89	2750	15
over 90	959	5.2
Total accounts receivable	**18320**	**100.0**

Activity ratios

- **Activity ratios** indicate how efficiently a firm is utilizing its assets to generate the sales.
  - ***Asset turnover = Sales / Av.asset***
  - ***Turnover period = Av.asset/Daily sales***
  - ***Av.asset = (Beg.asset+End.asset)/2***

Activity ratios

- ***Average collection period = Accounts receivable/ (Annual credit sales/365)***
- ***Inventory turnover = Costs of sales /Average inventory***
- ***Fixed-asset turnover = Sales / Net fixed assets***
- ***Total asset turnover = Sales / Total assets***

Financial leverage ratios

- **Financial leverage ratios** measure the degree to which a firm is financing its assets with fixed-charge sources of funds such as debt, preferred stock, or leases
  - ***Debt ratio = Total debt/Total assets***
  - ***Debt-to-equity = Total debt / Total equity***

Financial leverage ratios

- Financial leverage rule:
  - if the rate of return on equity exceed the cost of the borrowed funds (interest rate) – the more is the share of the debt, the more is return on assets
    ROI>i : ☐debt → ☐ROE
  - if the rate of return on equity is lower than the cost of the borrowed funds – the more is the share of debt, the lower is return on assets
    ROI<i : ☐debt → ☐ROE

Profitability ratios

- **Profitability ratios** measure the total effectiveness of a company's management in generating profits.
  - ***Gross profit margin = (Sales - Cost of sales) / Sales***
  - ***Net profit margin = EAT / Sales***
  - ***Return on investment (ROI) = EAT / Total investments***
  - ***Return on stockholders' equity(ROE) = EAT / Stockholders' equity***
  - ***Return on assets (ROA) = EAT / Total assets***

Market-based ratios

- **Market-based ratios** measure the market's (investor's) assessment of the risk and performance of a firm.
  - ***P/E = Market price per share / Current earnings per share***
  - ***P/BV = Market price per share / Book value per share***

SOME METHODS OF FINANCIAL ANALYSIS

Methods of financial analysis

- ***Vertical analysis*** – structure analysis of a company's statements
- ***Horizontal analysis*** – comparison of a company's statements through several periods
- ***Trend analysis*** – comparison of a company's results to a basic period or industry standards
- ***DuPont chart*** – profitability analysis
- ***Factor analysis*** – assessment of the most important factors influencing ROE
- ***Z-analysis*** – forecasting probability of bankruptcy

Trend analysis

- Steps of the trend analysis:
  1. Choose a ratio
  2. Choose a basic period / find industry standards
  3. Find information on the previous periods
  4. Draw a trend for the previous periods
  5. Analyze the trend comparing to the basic period or industry standard
  6. Make forecast for the future periods and draw the results at the trend

Trend analysis

DuPont Chart analysis

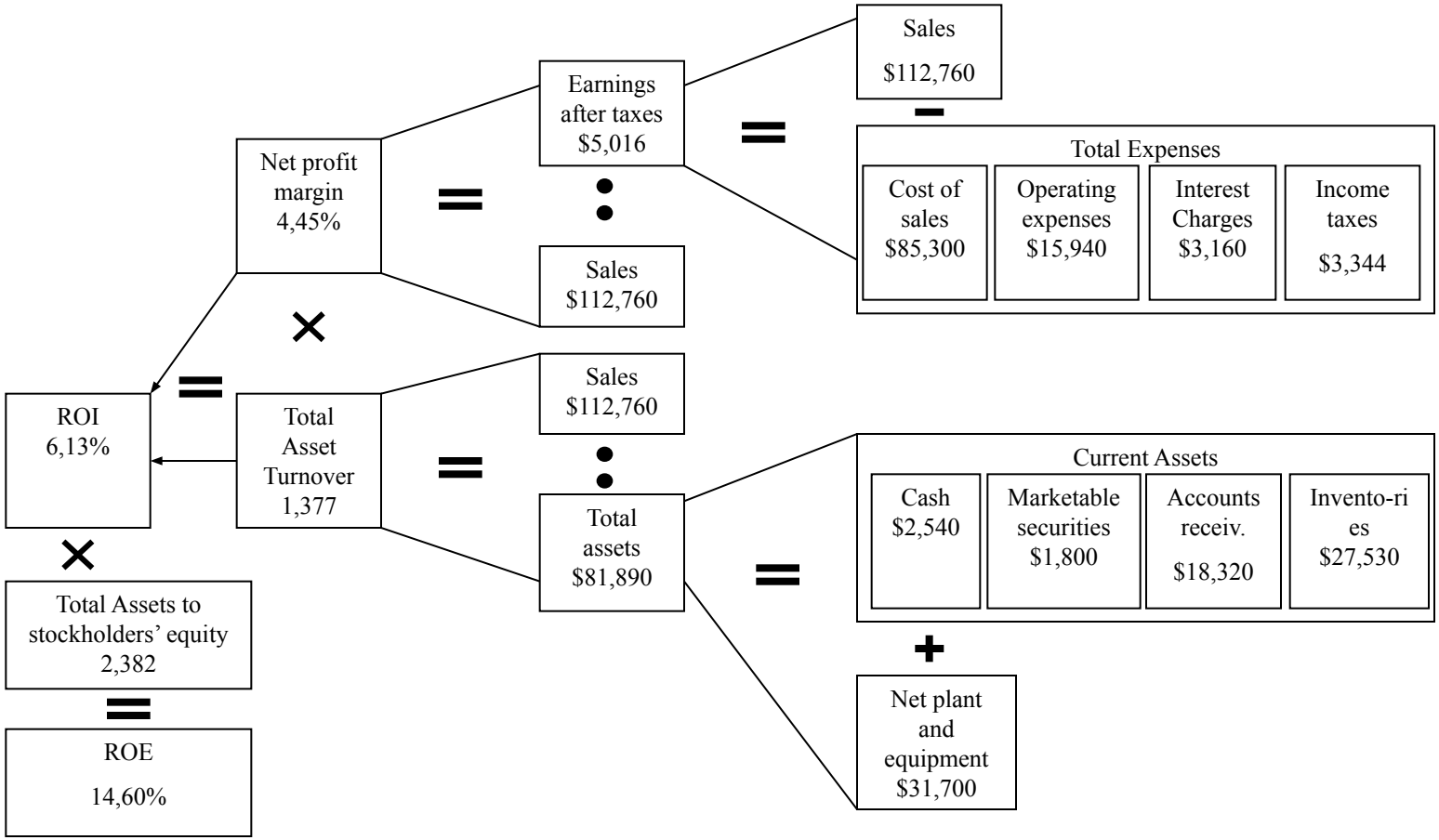
$$\frac{\text{EAT}}{\text{Tot.Assets}} = \frac{\text{EAT}}{\text{Sales}} * \frac{\text{Sales}}{\text{Total assets}}$$

ROI = NPM * TAT

$$\frac{\text{EAT}}{\text{St.Equity}} = \frac{\text{EAT}}{\text{Sales}} * \frac{\text{Sales}}{\text{Tot.Assets}} * \frac{\text{Tot.Assets}}{\text{St.Equity}}$$

ROE = NPM * TAT * EM

DuPont Chart analysis



Factor analysis

	2009, I qt.	2009, II qt.	2009, III qt.
ROE	a_0	a_1	a_2
NPM	x_0	x_1	x_2
TAT	y_0	y_1	y_2
EM	z_0	z_1	z_2
<u>Changes:</u> **ROE**		$a_1 - a_0$	$a_2 - a_1$
NPM		$x_1 y_0 z_0 - x_0 y_0 z_0$	$x_2 y_1 z_1 - x_1 y_1 z_1$
TAT		$x_1 y_1 z_0 - x_1 y_0 z_0$	$x_2 y_2 z_1 - x_2 y_1 z_1$
EM		$x_1 y_1 z_1 - x_1 y_1 z_0$	$x_2 y_2 z_2 - x_2 y_2 z_1$

Factor analysis

	2009, I qt.	2009, II qt.	2009, III qt.
ROE	0.634	0.837	1.401
NPM	0.564	0.981	0.318
TAT	0.061	0.049	0.090
EM	18.431	17.403	48.942
Changes: **ROE**		0.202	0.564
NPM		0.469	-0.565
TAT		-0.217	0.227
EM		-0.049	0.903

Z-analysis

$$Z = \frac{CA}{TA} * 1.2 + \frac{RE}{TA} * 1.4 + \frac{EBIT}{TA} * 3.3 + \frac{TE}{TA} * 0.6 + \frac{S}{TA}$$

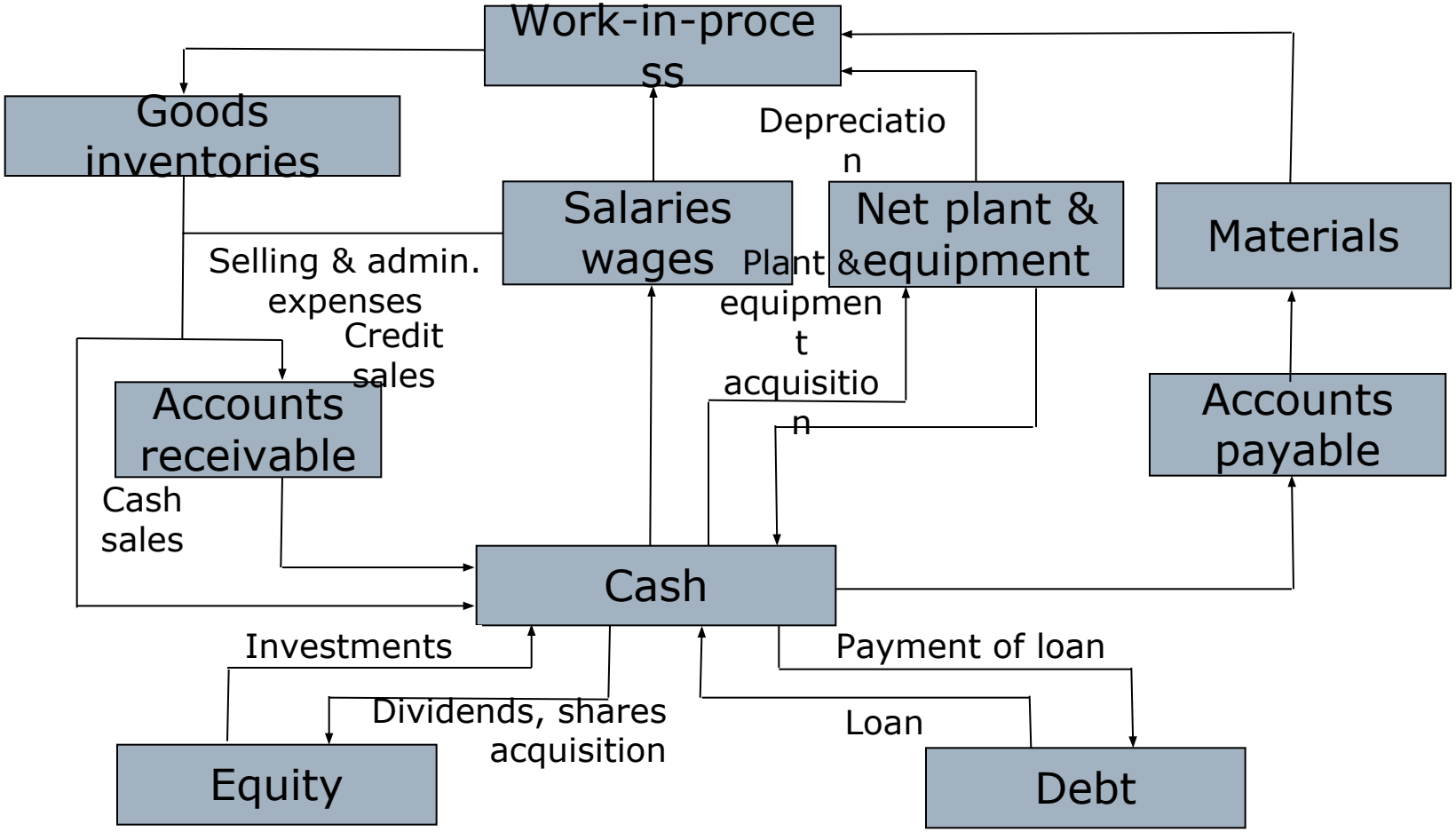
Z	*Bankruptcy probability*
Less 1.8	*Very high*
From 1.81 to 2.7	*High*
From 2.71 to 2.99	*Medium*
From 3.0	*Low*

CASH FLOW MANAGEMENT

'Oh, silly me. Did I put that chart back upside down?'

NET CASH FLOW

Cash as a company's working capital

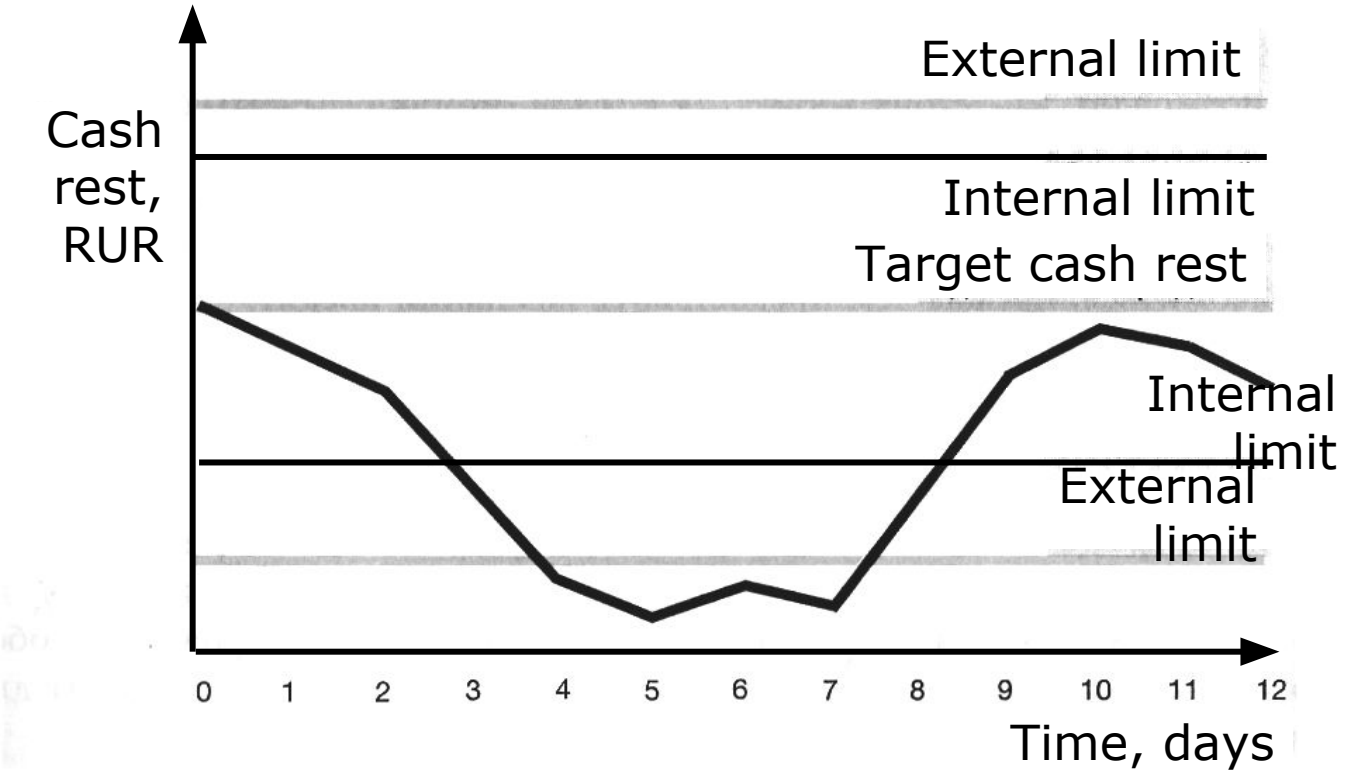


Cash as a company's working capital

- Cash volume depends on:
  - Production phase
  - Sales
  - Collection of accounts receivable
  - Capital expenditures
  - Financing

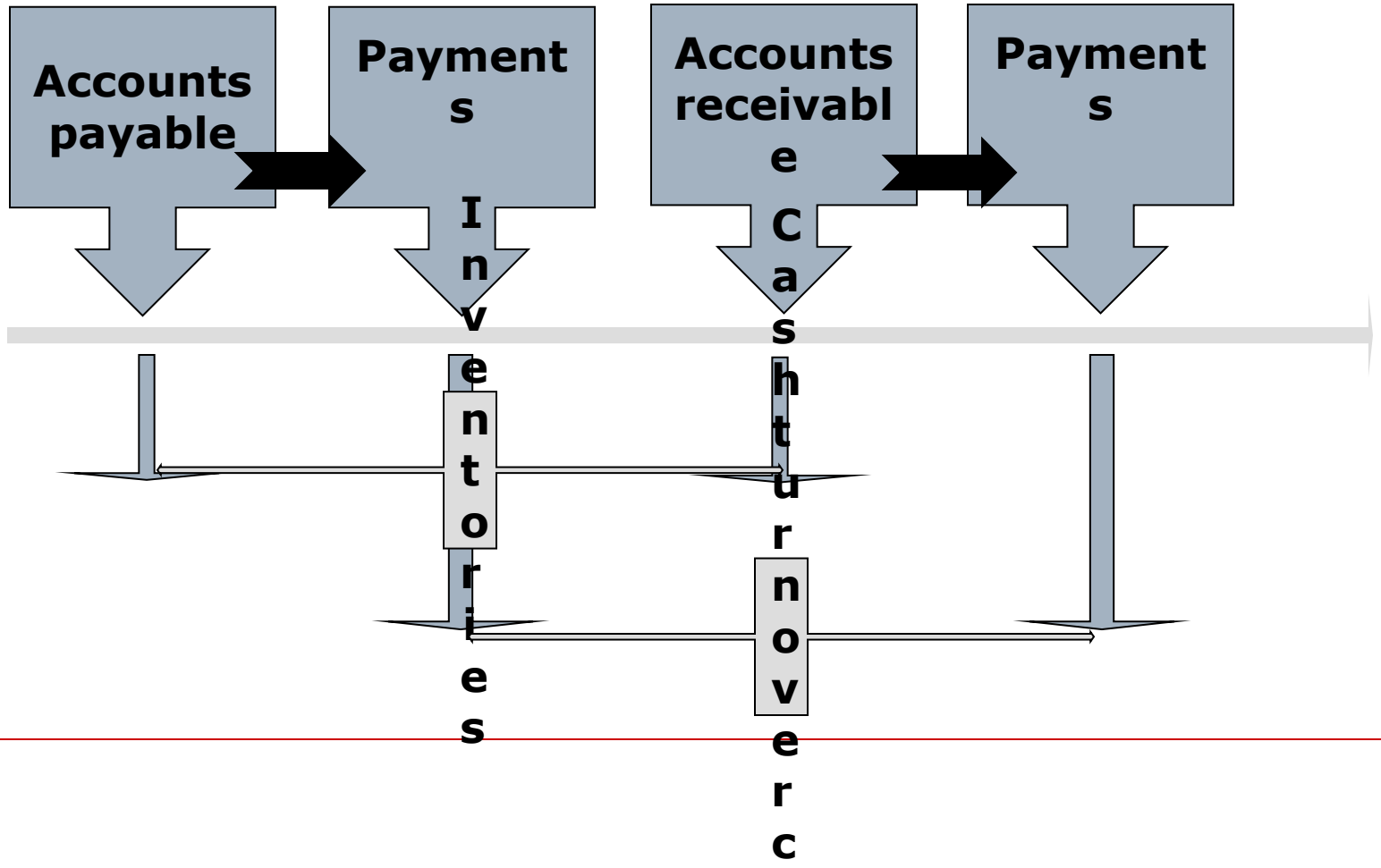
Cash as a company's working capital

- Control of a cash rest



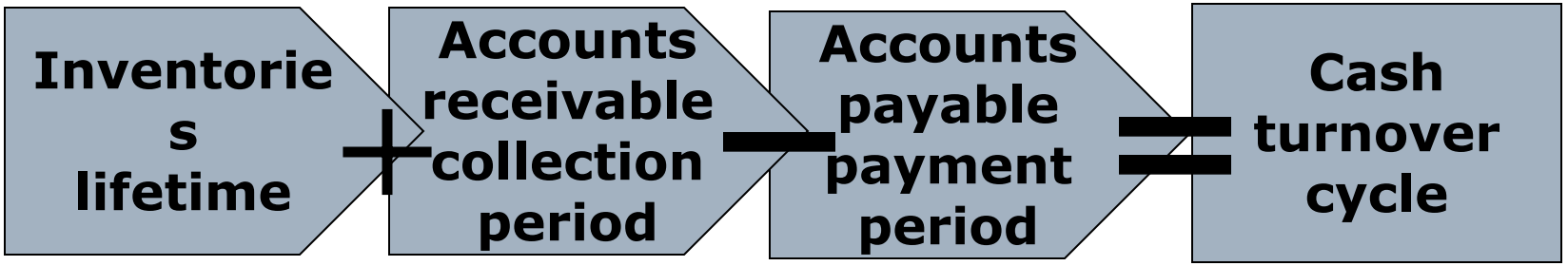
Cash as a company's working capital

Cash turnover cycle



Cash as a company's working capital

- Cash turnover cycle



Statement of cash sources & disbursements

- Cash sources
  - Current assets reduction (excl. cash)
  - Fixed assets reduction
  - Liabilities increase
  - Proceeds from sales of shares
  - Cash acquired through operating activity
- Cash disbursements:
  - Current assts increase (excl. cash)
  - Fixed assts increase
  - Liabilities reduction
  - Acquisition of shares
  - Dividends

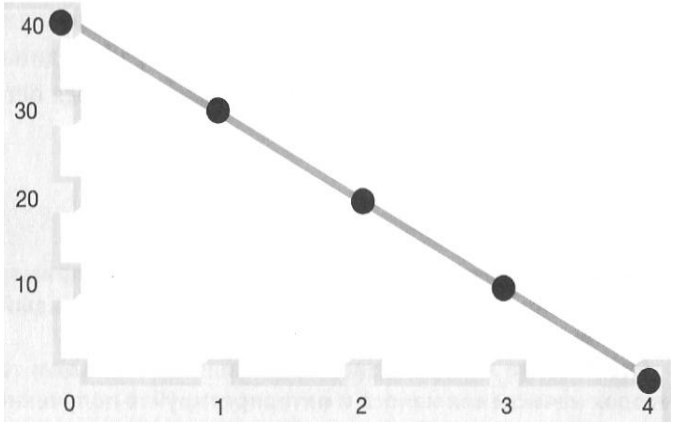
Depreciation

- Depreciation norm depends on:
  - Initial
  - Lifetime:
    - Technical
    - Effective
  - Rest cost
  - Method of depreciation:
    - Straight line
    - Accelerated

Depreciation

Straight-line

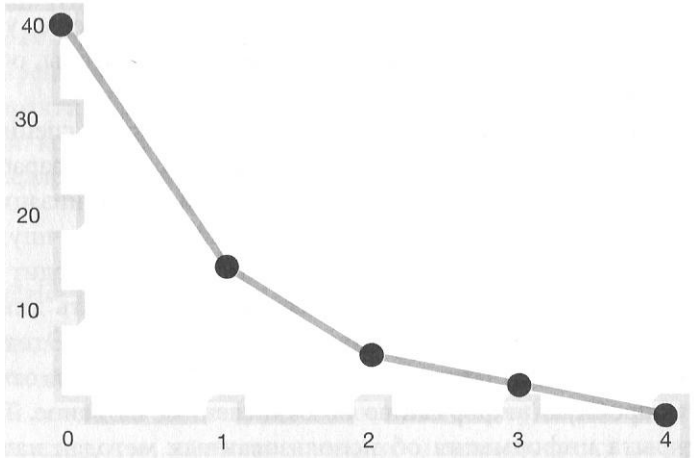
Rest cost, RUR



Lifetime, years

Accelerated

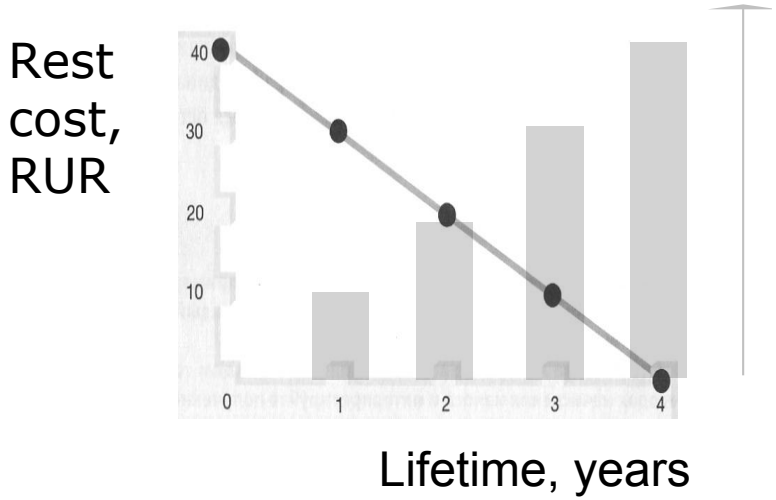
Rest cost, RUR



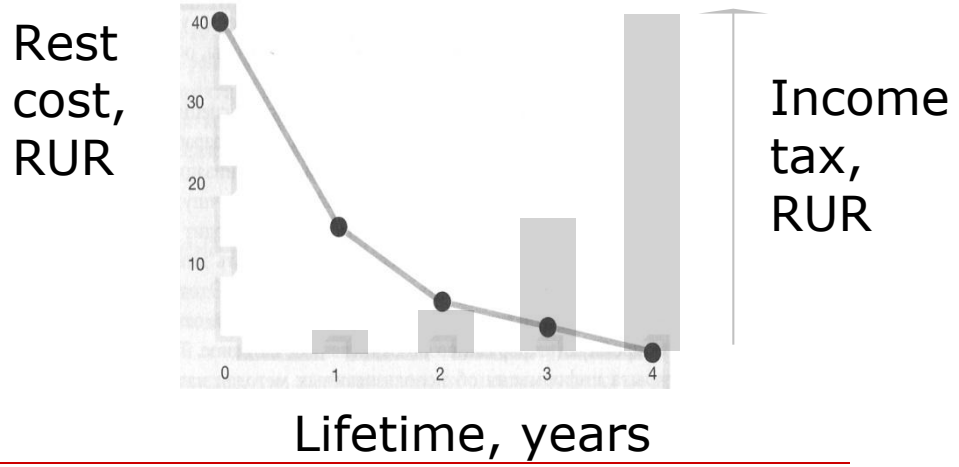
Lifetime, years

Deferred taxes

Straight-line



Accelerated



Deferred taxes

Calculation of Taxes for Financial Reporting and Tax Purposes (in millions of rub.)		
	Financial Reporting Purposes	**Tax Purposes**
Sales	100.00	100.00
Expenses, excluding depreciation	70.00	70.00
Depreciation: Straight line	10.00	
Accelerated		12.00
Income before taxes	20.00	18.00
Taxes (20%)	4.00	3.60
Net income	16.00	14.40

CASH FLOW FORECASTING

Forecasting of financial statements

5 steps:

1. Define basic data for forecasting:
   - external
     - income tax rate
     - interest rate
     - inflation
     - technological changes
     - volume of the market and growth perspectives
     - competition level
     - market strength of suppliers and customers…

Forecasting of financial statements

- internal:
  - investments policy
  - external financing policy
  - accounting policy
  - dividend policy
  - planned profitability level
  - cost structure
  - asset base and structure
  - sources of funds structure

Forecasting of financial statements

2. Forecast the volume of sales
   - bottom-up forecasting
   - statistics analysis
   - marketing analysis
3. Forecast other items of the statements
   - variable & fixed costs
   - balance items depending on sales
   - cash flow
4. Prepare pro-forma financial statements

Forecasting of financial statements

5. Analysis of pro forma financial statements
   - Cash flows
   - Additional financing & sources
   - Reinvestment possibilities
   - Profit/risk analysis
   - Sales/costs analysis
   - General financial performance
   - Financial leverage

Percentage of sales forecasting method

- The percentage of sales forecasting method:
  - permits a company to forecast the amount of financing it will need for a given increase of sales
  - while sales increase, increase company's assets and liabilities
  - the difference between the forecasted asset increase and the forecasted current liability is equal to the total financing the company will need.

Percentage of sales forecasting method

Total financing needed = Forecasted asset increase - Forecasted current liability increase

$$= A^* \frac{\Delta S}{S} - CL^* \frac{\Delta S}{S}$$

Internal net cash provided = Forecasted CF - Dividends

Additional financing needed = Total financing needed - Internal net cash provided

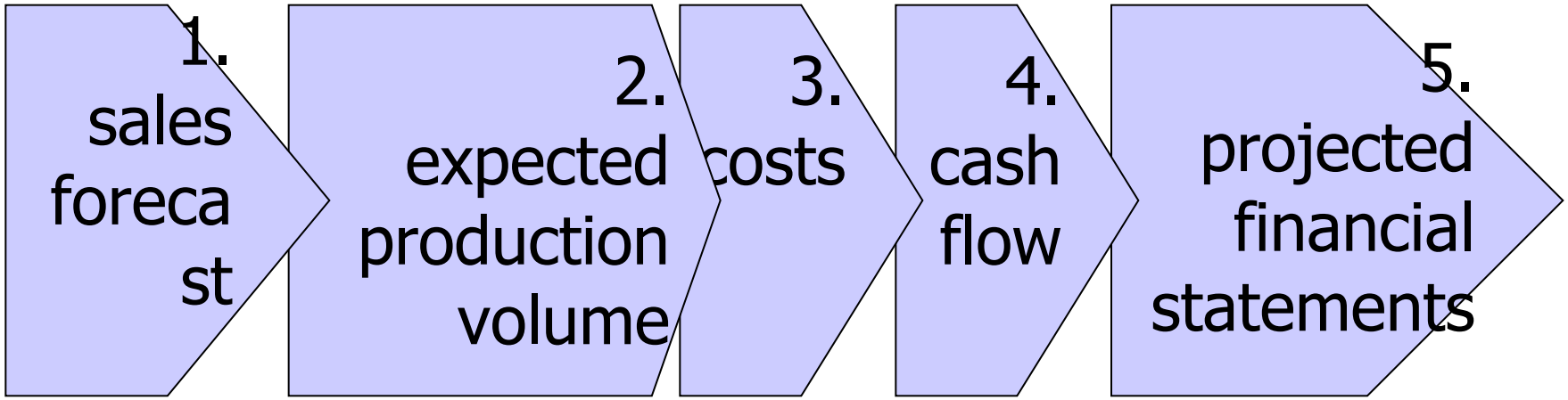
$$= A^* \frac{\Delta S}{S} - CL^* \frac{\Delta S}{S} - (CF - D)$$

Percentage of sales forecasting method

- To support the sales increase the management of the company has to decide whether to
  - (1) borrow on a short-term basis,
  - (2) to borrow on a long-term basis,
  - (3) sell additional common stock, or
  - (4) cut dividends.

Budgeting

- **Five steps in preparing a budget**



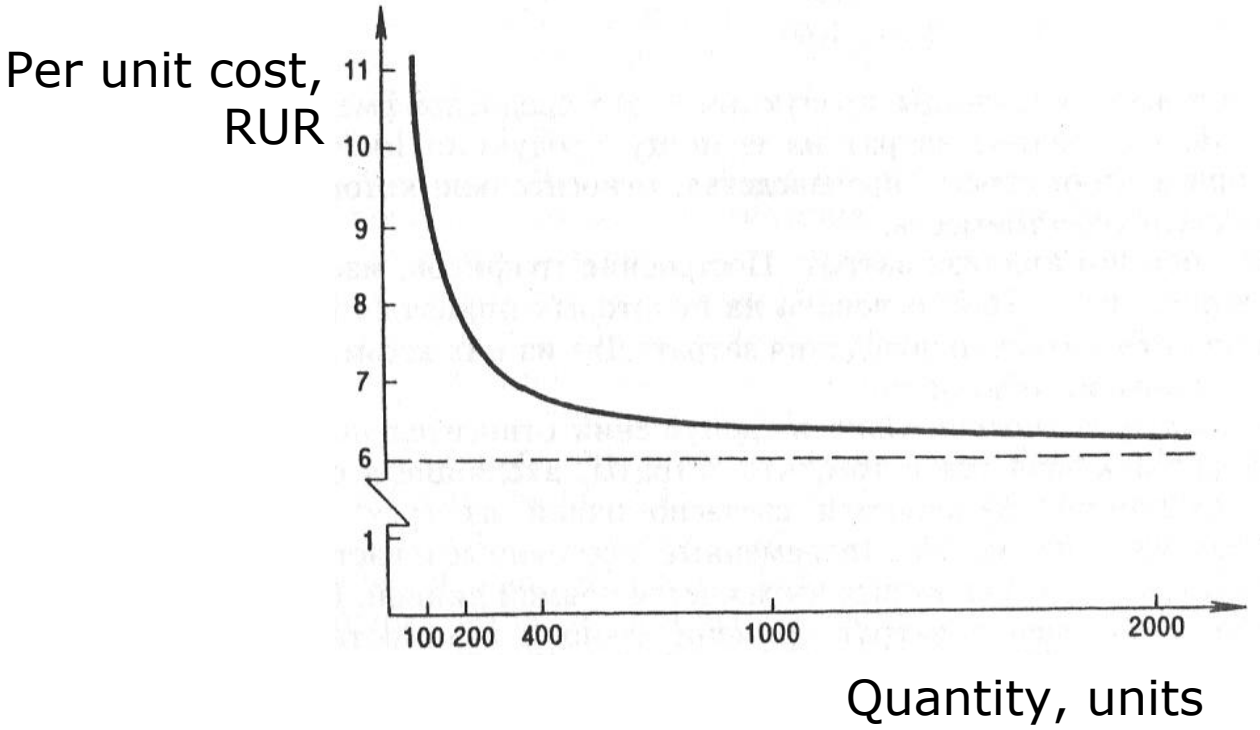
COSTS PLANNING

Types of costs

- **Variable costs** are expenses that change in proportion to the volume of production:
  - Materials
  - Labor
- **Fixed costs** are business expenses that are not dependent on the activities of the business:
  - Heating
  - Water for non-production purposes
  - Salaries
  - Selling & administrative expenses…
- **Semi variable cost** is an expense which contains both a fixed cost component and a variable cost component.:
  - Electricity
  - Communication means…

Types of costs

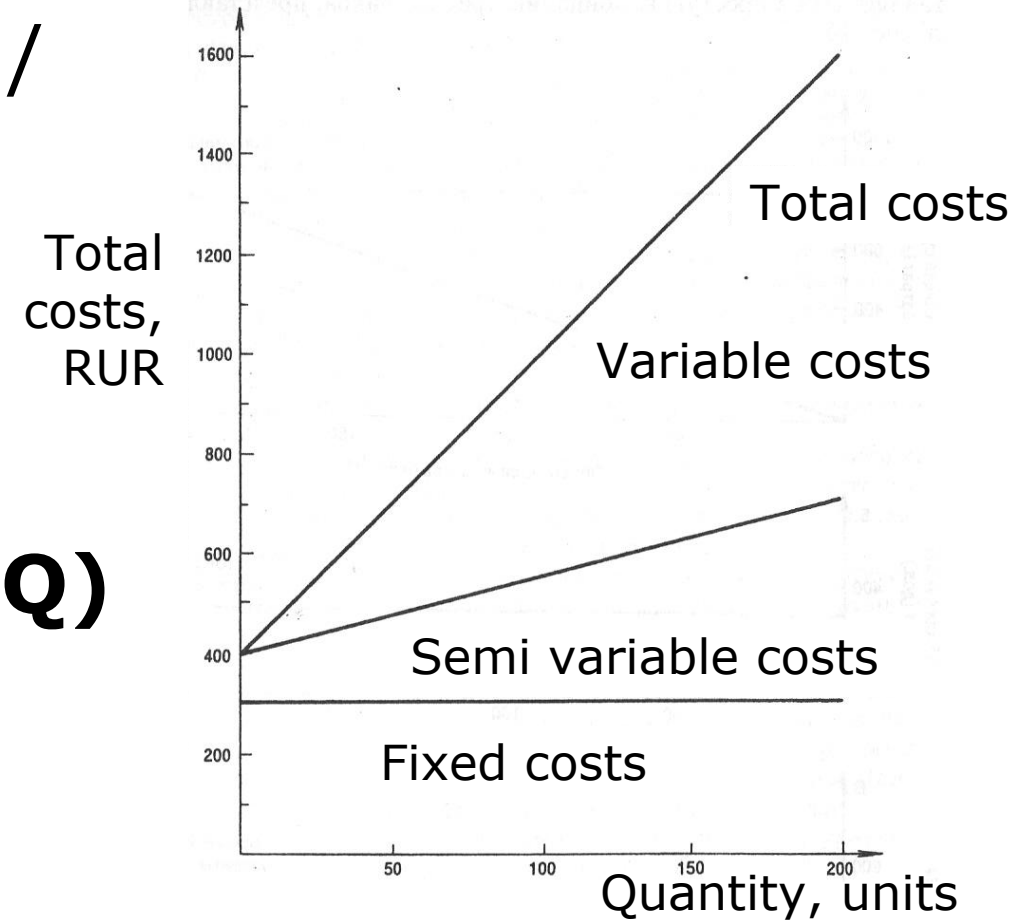
- Dependence of per unit cost on the volume of production



Types of costs

- Total costs / quantity

- **TC = FC + (VC*Q)**



Cost structure

- A **cost** is the value of money that has been used up to produce something
  - **Direct costs** are those for activities or services that benefit specific projects
  - **Indirect costs** are those for activities or services that benefit more than one project.

Cost structure

- **Costs usually charged directly**
  - Project staff
  - Consultants
  - Project supplies
  - Publications
  - Travel
  - Training
- **Costs either charged directly or allocated indirectly**
  - Telephone charges
  - Computer use
  - Project clerical personnel
  - Postage and printing
  - Miscellaneous office supplies
- **Costs usually allocated indirectly**
  - Utilities
  - Rent
  - Audit and legal
  - Administrative staff
  - Equipment rental

Cost structure