Corporate Finance

Overview

- Financial statements
- Reports
  - Balance Sheet
  - Income Statement
  - Statement of Retained Earnings
  - Statement of Cash Flows
- Financial Ratios
- **Making Capital Investment Decisions**
  - **Accounting rate of return (ARR); Payback period (PP); Net present value (NPV); Internal rate of return (IRR)**

Annual report

- Annual report – four basic financial statements
  - Balance Sheet
  - Income Statement
  - Statement of Retained Earnings
  - Statement of Cash Flows

Financial staff's responsibilities

- Forecasting and planning
- Major investment and financing decision
- Coordination and control
- Dealing with financial markets
- Risk management

Balance sheet

- **ASSETS**
  - Fixed assets (property, plant, equipment, intangible assets)
  - Inventory
  - Accounts receivable
  - Marketable securities
  - Cash
    - Total current assets
  - **TOTAL ASSETS**

- **EQUITY & LIABILITIES**
  - Equity (preferred, common)
  - Retained earnings
  - Long term debt
  - Accounts payable
  - Short term debt
    - Total current liabilities
  - **TOTAL LIABILITIES AND EQUITY**

Balance sheet

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  - Accounts payable
  - Short term debt
    - Total current liabilities
  - **TOTAL LIABILITIES AND EQUITY**

Balance sheet

- **ASSETS**
  - Fixed assets (property, plant, equipment, intangible assets) 1140
  - Inventory 575
  - Accounts receivable 265
  - Marketable securities 5
  - Cash 15
    - Total current assets 860
  - **TOTAL ASSETS 2000**

- **EQUITY & LIABILITIES**
  - Equity (preferred, common) 1000
  - Retained earnings 450
  - Long term debt 250
  - Accounts payable 45
  - Short term debt 255
    - Total current liabilities
  - **TOTAL EQUITY AND LIABILITIES**
    - **2000**

Income statement

Net sales	3000
Costs excluding depreciation	2650
Depreciation	183
Total operating costs	2833
Earnings before interest and taxes (EBIT)	167
Less interest	30
Earning before taxes (EBT)	137
Taxes	22
Net income	115

Statement of Cash-flow

- OPERATING ACTIVITIES (+ or -)
  - Operating activities
  - Depreciation and amortization
  - Changes in other accounts affecting operations:
    - (Increase)/decrease in accounts receivable
    - (Increase)/decrease in inventories
    - Increase/(decrease) in accounts payable
  - Net cash provided by operating activities
- LONG-TERM INVESTING ACTIVITIES (+ or -)
  - Capital expenditures
  - Investments in subsidiary
  - Proceeds from sales of investments
- FINANCING ACTIVITIES (+ or -)
  - Increase in notes payable
  - Payments of long-term debt
  - Increase in bonds

Statement of Retained Earnings

- Balance of retained earnings at Dec. 31, 2018 — 525
  - Add: Net income, 2019 — 75
  - Less: Dividends to common stockholders — 35
- Balance of retained earnings at Dec. 31, 2019 — 565

Analysis of Financial Statements – Ratios Analysis

- **Liquidity Analysis Ratios**
- **Asset Management Ratios**
- **Debt Management Ratios**
- **Profitability Ratios**

Ratios Analysis –
Liquidity Analysis Ratios

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

$$Quick, or\ acid\ test = \frac{Current\ assets - Inventories}{Current\ liabilities}$$

$Current\ ratio = \frac{Current\ assets}{Current\ liabilities}$	860/ 300	2.87	Industry Average	Comment
$Quick, or\ acid\ test = \frac{Current\ assets - Inventories}{Current\ liabilities}$	(860 - 575) /300	0.95	Industry Average	Comment

Ratios Analysis –
Asset Management Ratios

$$Inventory\ turnover = \frac{Sales}{Inventories}$$

$$Fixed\ assets\ turnover = \frac{Sales}{Net\ fixed\ assets}$$

$$Total\ assets\ turnover = \frac{Sales}{Total\ assets}$$

$$Days\ sales\ outstanding = \frac{Receivables}{Annual\ sales / 360}$$

Ratios Analysis –
Asset Management Ratios

$Inventory\ turnover = \frac{Sales}{Inventories}$	3000/575	5.21	Industry Average	Comment
$Fixed\ assets\ turnover = \frac{Sales}{Net\ fixed\ assets}$	3000/1140	2.63	Industry Average	Comment
$Total\ assets\ turnover = \frac{Sales}{Total\ assets}$	3000/2000	1.5	Industry Average	Comment
$Days\ sales\ outstanding = \frac{Receivables}{Annual\ sales/360}$	265/ (3000/360)	32 days	Industry Average	Comment

Ratios Analysis –
Debt Management Ratios

$$Total\ debt\ to\ total\ assets = \frac{Total\ debt}{Total\ assets}$$

$Total\ debt\ to\ total\ assets = \frac{Total\ debt}{Total\ assets}$	550/2000	27.5 %	Industry Average	Comment

Ratios Analysis – **Profitability Ratios**

$$\text{Return on total assets}(ROA) = \frac{Net\ income}{Total\ assets}$$

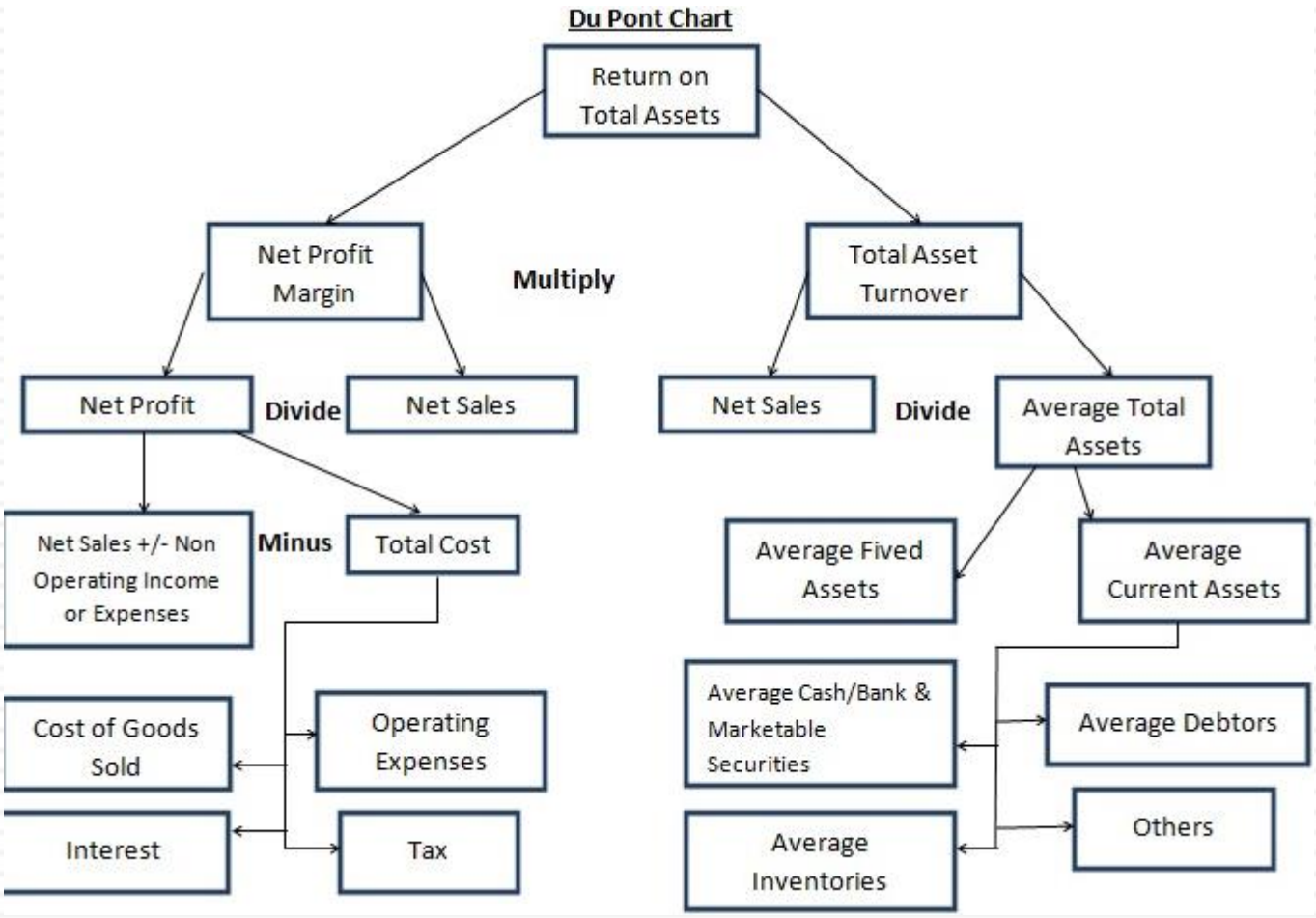
$$\text{Return on equity}(ROE) = \frac{Net\ income}{Common\ equity}$$

$$\text{Profit margin on sales} = \frac{Net\ income}{Sales}$$

Ratios Analysis – **Profitability Ratios**

$\text{Return on total assets}(ROA) = \frac{Net income}{Total assets}$	115/2000	5.75 %	Industry Average	Comment
$\text{Return on equity}(ROE) = \frac{Net\ income}{Common equity}$	115/1450	7.9%	Industry Average	Comment
$\text{Profit margin on sales} = \frac{Net\ income}{Sales}$	115/3000	3.83 %	Industry Average	Comment

Ratios Analysis – Du Pont Chart



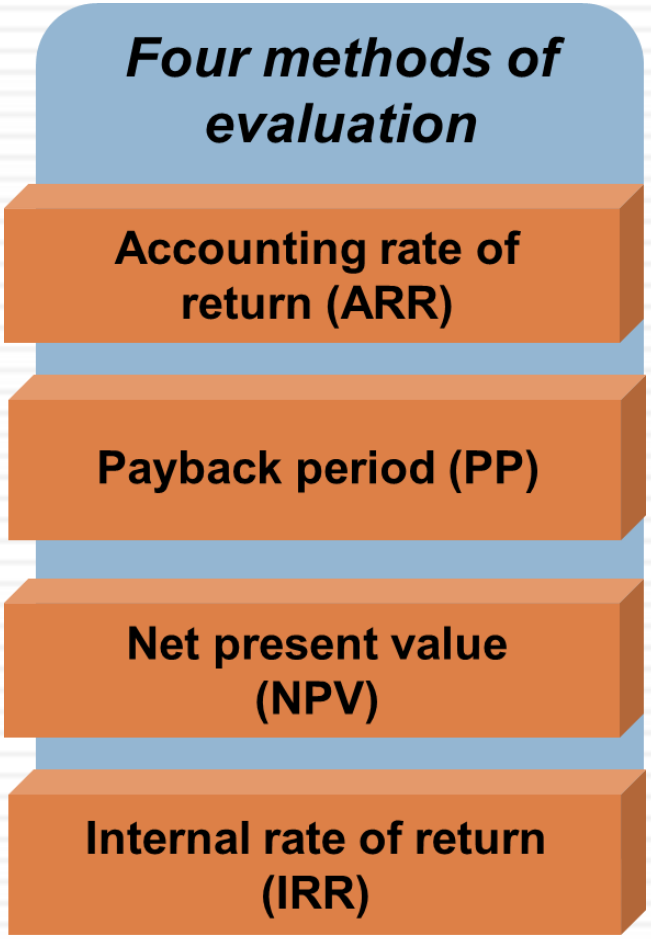
Chapter 2

Making Capital Investment Decisions

The nature of investment decisions

- **Large amounts of resources are often involved**
- **It is often difficult and/or expensive to bail out of an investment once undertaken**

Investment appraisal methods



Accounting rate of return (ARR)

$$ARR = \frac{\text{Average annual operating profit}}{\text{Average investment to earn that profit}} \times 100\%$$

ARR decision rule

- **For a project to be acceptable, it must achieve at least a minimum target ARR**
- **Where competing projects exceed the minimum rate, the one with the highest ARR should be selected**

Example:

- Average annual operating profit before depreciation:
- 40,000 Euro
- Annual depreciation (assuming straight line): 16,000 Euro
- Average annual operating profit after depreciation: 24,000 Euro
- Average investment: 60,000 Euro
- **ARR = 24,000 / 60,000 x 100% = 40%**

Problems with ARR

- Ignores the timing of cash flows
- Use of average investment
- Use of accounting profit
- Competing investments

Payback period (PP)

PP decision rule

- **Project should have a shorter payback period than the required maximum payback period**
- **If competing projects have payback periods shorter than maximum payback period, the one with the shortest payback period is selected**

Example

Time		Net cash flows (Euro)	Cumulative net cash flows (Euro)	
Immediately	Cost of machine	(100)	(100)	
1 year's' time	Op. Profit before depreciation	20	(80)	(-100 + 20)
2 years' time	Op. Profit before depreciation	40	**(40)**	(-80 + 40)
3 years' time	Op. Profit before depreciation	60	**20**	(-40 + 60)
4 years' time	Op. Profit before depreciation	60	80	
5 years' time	Op. Profit before depreciation	20	100	
5 years' time	Disposal proceeds	20	120	

Payback period = 2 years + 40/60 years = 2 2/3 years

Problems with PP

- Does not take timing of cash flows fully into account
- Ignores cash flows after PP
- Does not take risk fully into account
- Not related to wealth maximisation objective
- Arbitrarily determined target payback period

NPV decision rule

- **If project NPV is positive, it should be accepted; if it is negative, it should be rejected**
- **If competing projects have positive NPVs, the one with the highest NPV is selected**

Net Present Value

$$NPV = \sum_{i=1}^{n} \frac{Cash\ Flow_i}{(1+r)^i} - Initial\ Investment$$

Where:

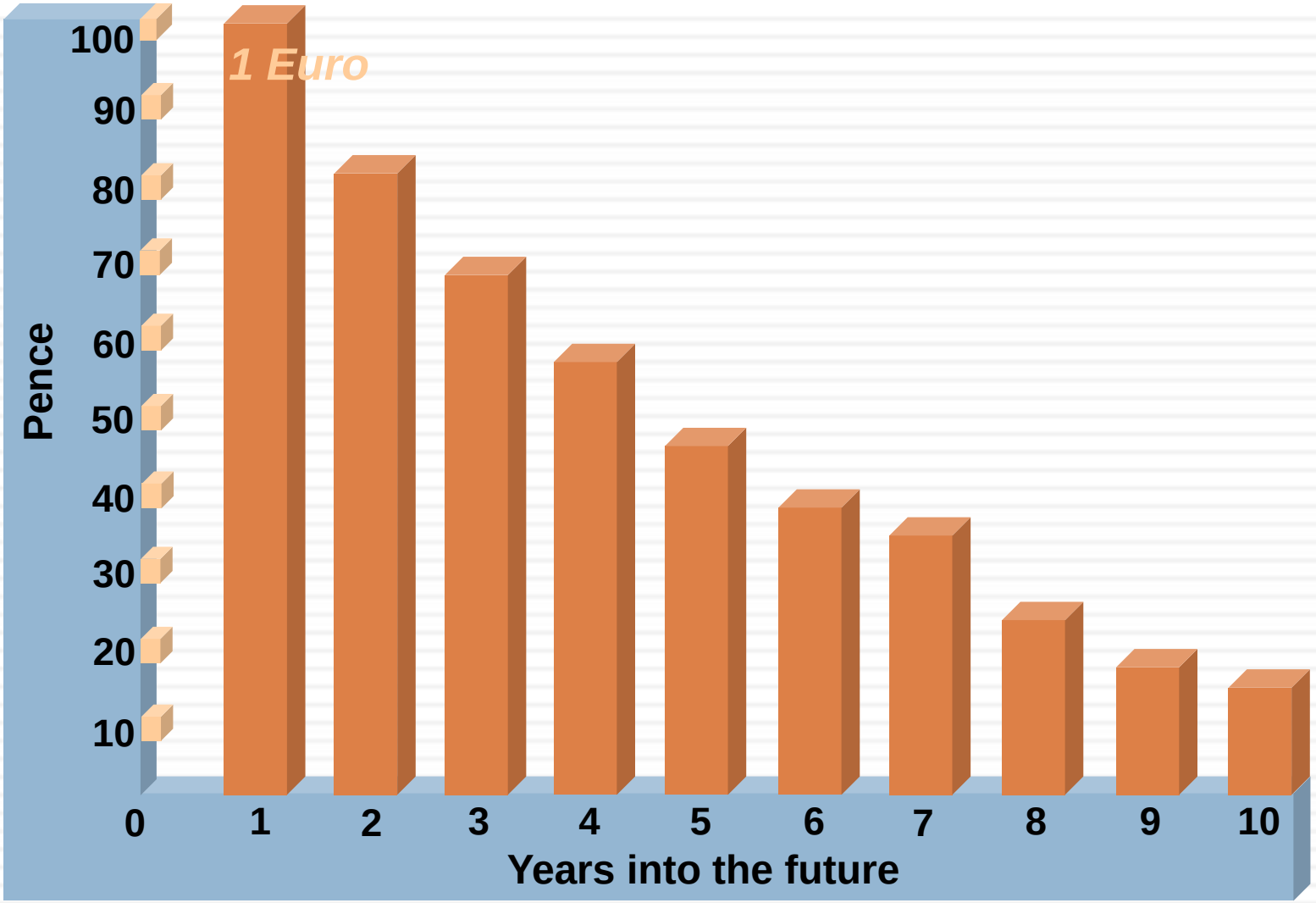
- r – discount or interest rate
- n – the number of time periods
- i – the cash flow period

Example

Time	Cash flows (Euro)	Discount factor 20%	PV (Euro)
Immediately	(100)	1.000	(100)
1 year's time	20	.833	
2 years' time	40	.694	
3 years' time	60	.579	
4 years' time	60	.482	
5 years' time	20	.402	
5 years' time	20	.402	
Net present value (NPV)			

Project has positive NPV, therefore should be accepted

Present value of 1 Euro receivable at various times in the future, assuming an annual financing cost of 20 per cent



Why NPV is better than ARR and PP

NPV fully addresses each of the following:

- **The timing of the cash flows**
- **The whole of the relevant cash flows**
- **The objectives of the business**

Internal rate of return (IRR)

Internal rate of return (IRR)	***The discount rate, which, when applied to the future project cash flows, produces a zero NPV***

IRR decision rule

- **Project must meet a minimum IRR requirement (The opportunity cost of finance)**
- **If competing projects exceed minimum IRR requirement, the one with the highest IRR is selected**

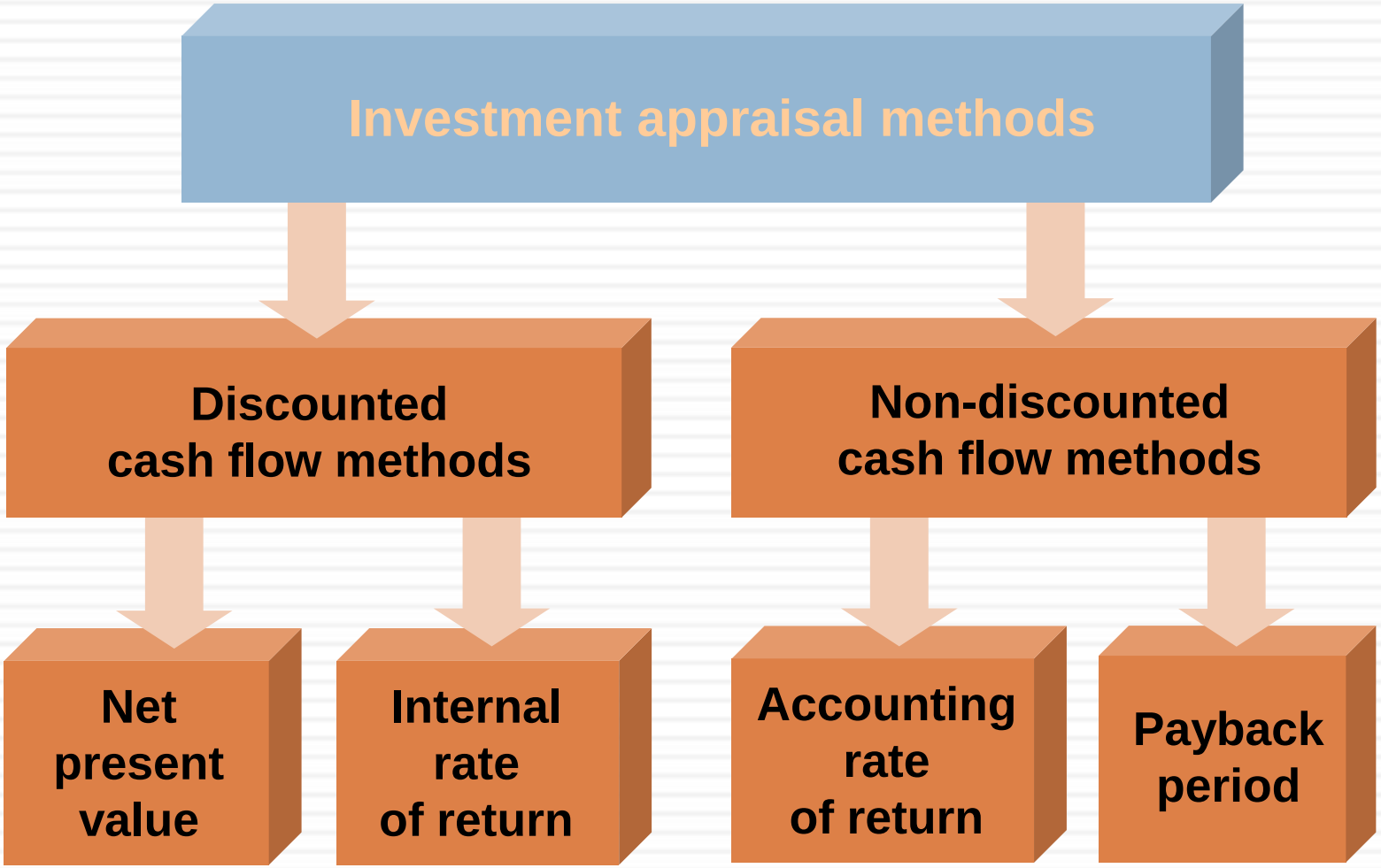
Problems with IRR

- Does not directly address wealth maximisation
- Ignores the scale of investment
- Has difficulty with unconventional cash flows

Some practical points related to investment appraisal

- Relevant costs
- Taxation
- Cash flows not profit flows
- Year-end assumption
- Interest payments
- Other factors

The main investment appraisal methods



Investment appraisal in practice

Many surveys have shown the following features:

- **Businesses tend to use more than one method**
- **NPV and IRR have become increasingly popular**
- **Continued popularity of the PP and ARR methods**
- **Larger businesses rely more heavily on NPV and IRR than smaller businesses look at Profitability**

The main points of this chapter may be summarised as follows:

- **Accounting rate of return (ARR)**
- ARR is the average accounting profit from the project expressed as a percentage of the average investment.
- Decision rule – projects with an ARR above a defined minimum are acceptable; the greater the ARR, the more attractive the project becomes.
- **Conclusions on ARR:**
- does not relate directly to shareholders' wealth – can lead to illogical conclusions;
- takes almost no account of the timing of cash flows;
- ignores some relevant information and may take account of some irrelevant;
- relatively simple to use;
- much inferior to NPV.

- **Payback period (PP)**
  - PP is the length of time that it takes for the cash outflow for the initial investment to be repaid out of resulting cash inflows.
  - Decision rule – projects with a PP up to a defined maximum period are acceptable;
  - the shorter the PP, the more attractive the project.
- **Conclusions on PP:**
  - does not relate to shareholders' wealth;
  - ignores inflows after the payback date;
  - takes little account of the timing of cash flows;
  - ignores much relevant information;
  - does not always provide clear signals and can be impractical to use;
  - much inferior to NPV, but it is easy to understand and can offer a liquidity insight,which might be the reason for its widespread use.

- **Net present value (NPV)**
  - NPV is the sum of the discounted values of the net cash flows from the investment.
  - Money has a time value.
  - Decision rule – all positive NPV investments enhance shareholders' wealth; the greater the NPV, the greater the enhancement and the greater the attractiveness of the project.
  - PV of a cash flow = cash flow * $1/(1 + r)n$, assuming a constant discount rate.
  - Discounting brings cash flows at different points in time to a common valuation basis (their present value), which enables them to be directly compared.
- **Conclusions on NPV:**
  - relates directly to shareholders' wealth objective;
  - takes account of the timing of cash flows;
  - takes all relevant information into account;
  - provides clear signals and is practical to use.

Internal rate of return (IRR)

- IRR is the discount rate that, when applied to the cash flows of a project, causes it to have a zero NPV.
- Represents the average percentage return on the investment, taking account of the fact that cash may be flowing in and out of the project at various points in its life.
- Decision rule – projects that have an IRR greater than the cost of capital are acceptable;
- the greater the IRR, the more attractive the project.
- Cannot normally be calculated directly; a trial-and-error approach is usually necessary.

- **Conclusion on IRR:**
  - does not relate directly to shareholders' wealth.
  - usually gives the same signals as NPV but can mislead where there are competing projects of different size;
  - takes account of the timing of cash flows;
  - takes all relevant information into account;
  - problems of multiple IRRs when there are unconventional cash flows;
  - inferior to NPV.

- **Use of appraisal methods in practice**
  - All four methods identified are widely used.
  - The discounting methods (NPV and IRR) show a steady increase in usage over time.
  - Many businesses use more than one method.
  - Larger businesses seem to be more sophisticated in their choice and use of appraisal methods than smaller ones.
- **Investment appraisal and strategic planning**
  - It is important that businesses invest in a strategic way so as to play to their strengths.