

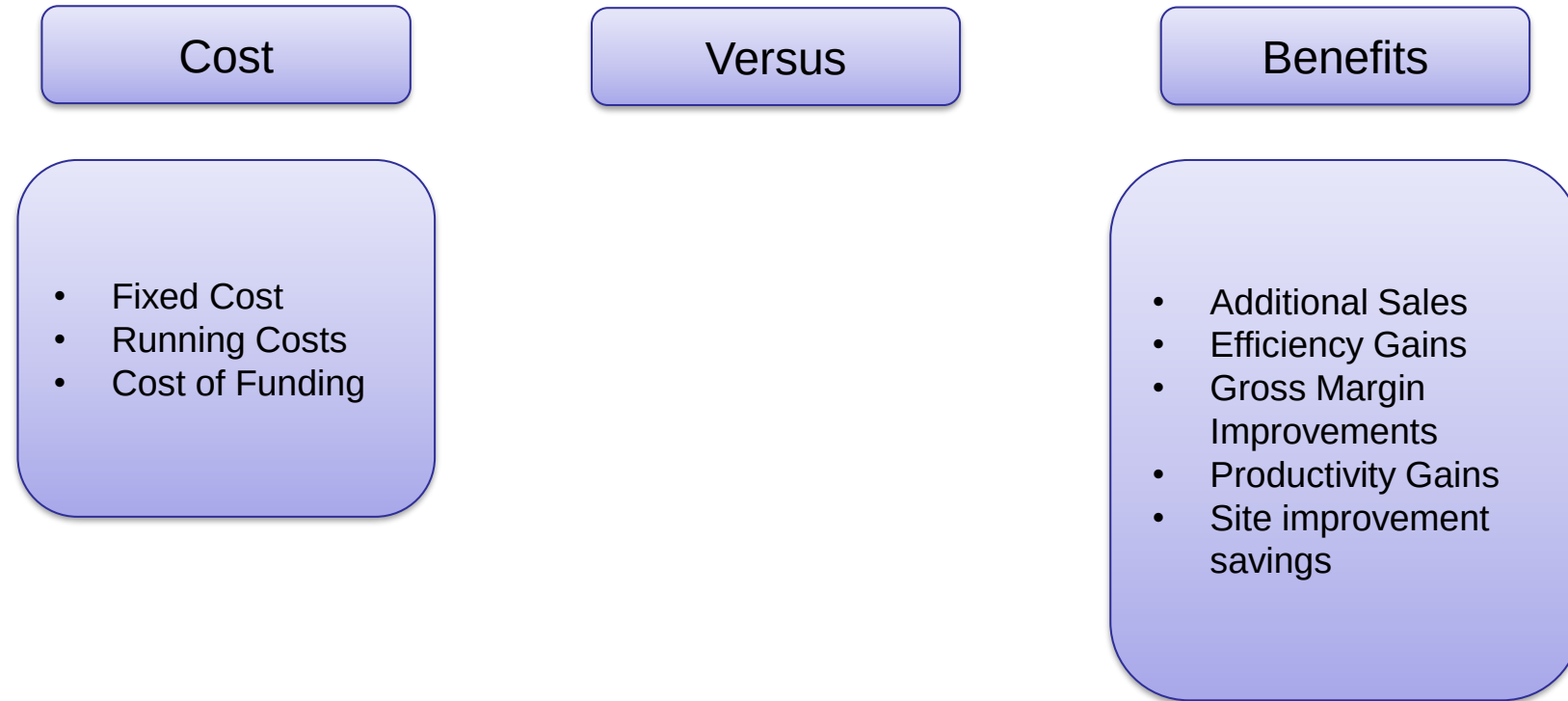
Finance Management & Planning

Project Appraisal (Week 7)

This Week

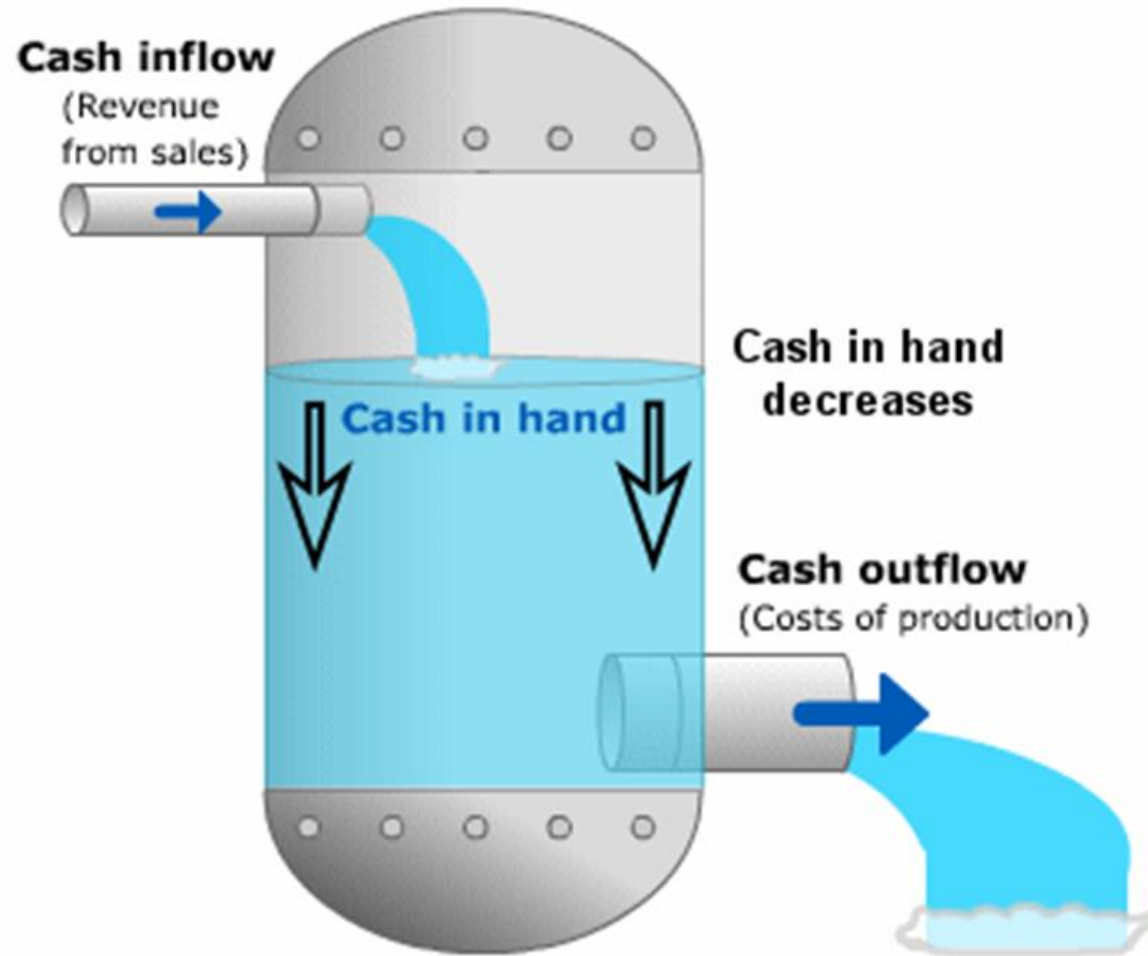
- How are your assignments progressing ?
- Any Questions on
 - NPV, Payback , IRR and PI / BCR
 - Capital Rationing
- Today – The last of the appraisal tools we are utilising in this module
- Accounting Rate of Return (ARR)

Financial Appraisals

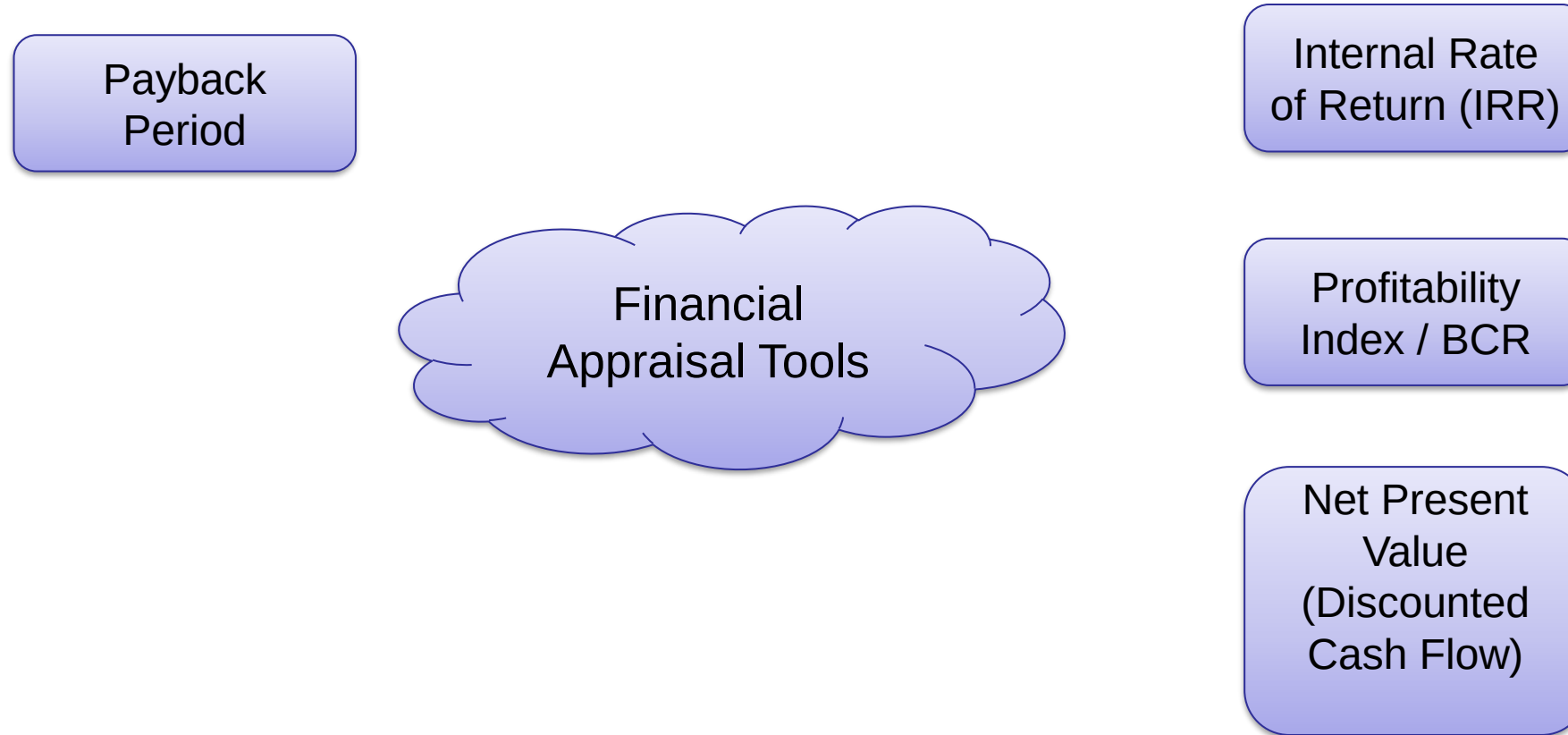


Remember your analysis is only as good as the strength of your data

To Date all of the Project appraisal Models discussed have measured cashflows in and out of the business



Financial Appraisals Tools



- Time Value of Money

Definition

Time Value of Money is a concept that recognizes the relevant worth of future cash flows arising as a result of financial decisions by considering the opportunity cost of funds.

Concept

Money loses its value over time which makes it more desirable to have it now rather than later.

- Inflation
- Interest Rates
- Risk

Project A has an Investment of £100k with the following Cash inflow resulting from the implementation of the project. WACC of 10%.

Cash Out	(100,000)
----------	-----------

Cash In	
1	35,000
2	35,000
3	35,000
4	35,000
5	35,000

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

Through the model we are then using a Future Value of Money approach

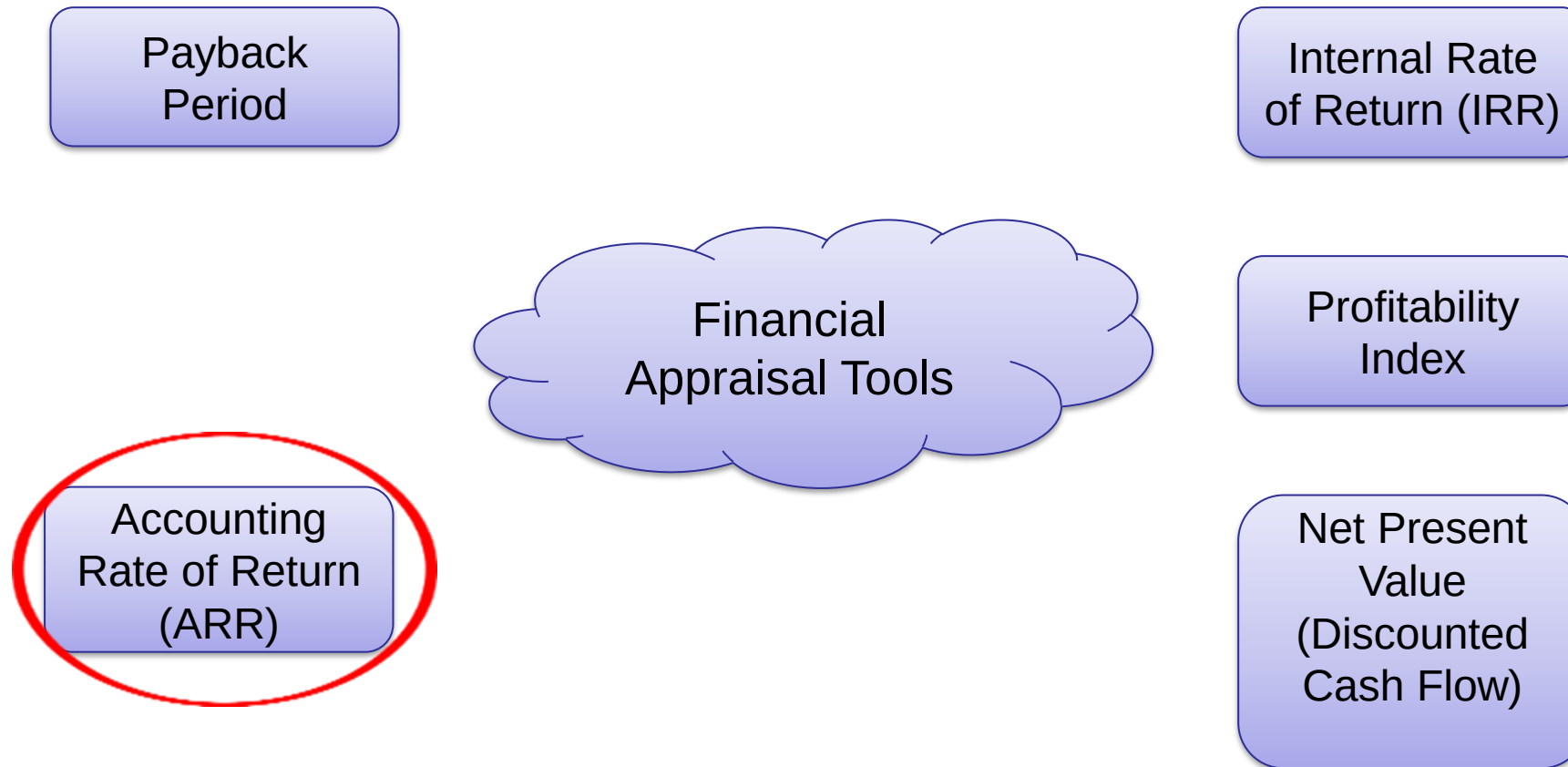
Cash flow and profit are different

Cash flow is the money that flows in and out of the business activities, whereas profit is what remains from revenue after all business expenses have been deducted.

A business may be profitable, but it needs cash to survive in order to pay its short-term liabilities

While profitability usually implies good cash flow in the long term, it may not hold true in the short to medium term.

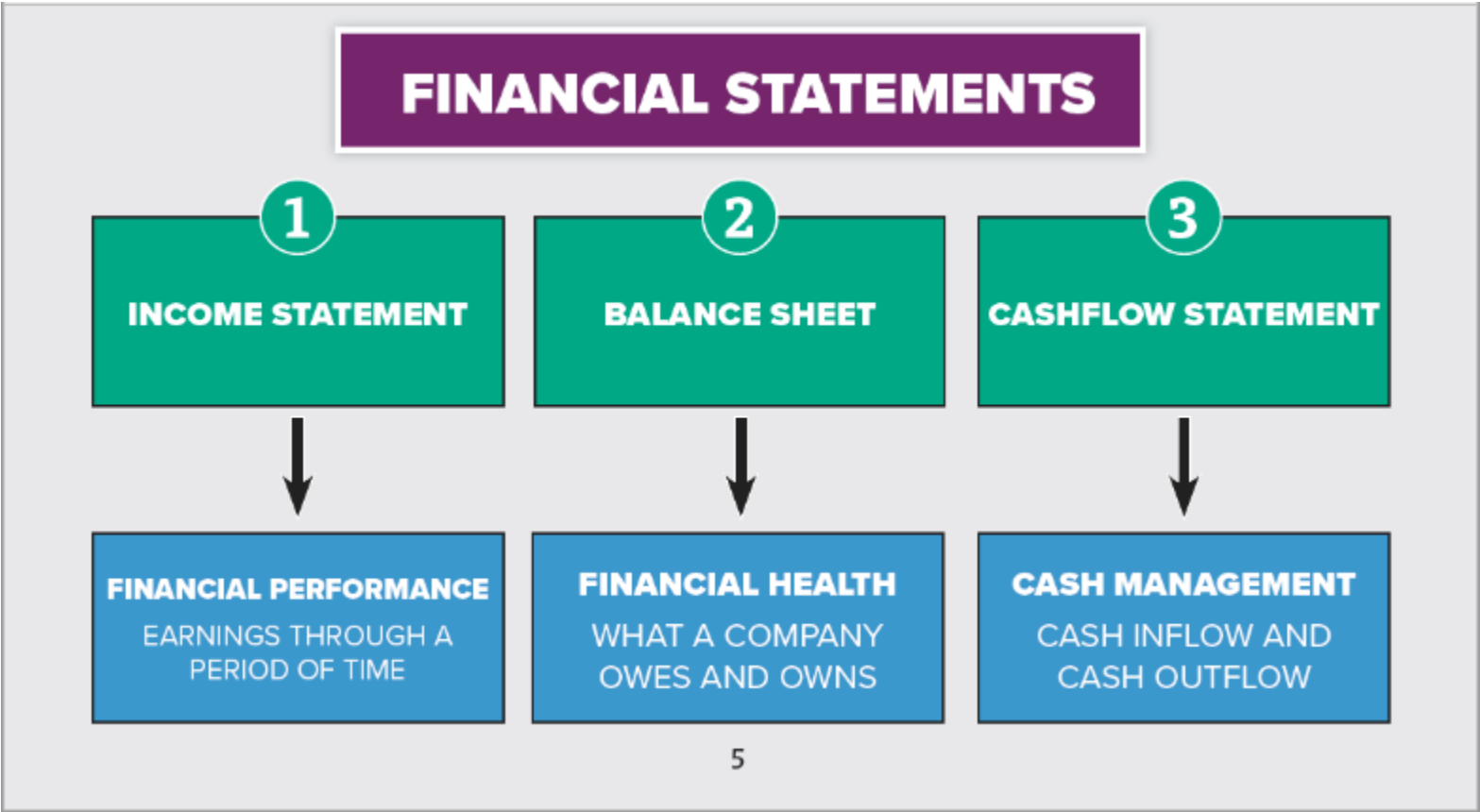
Financial Appraisals Tools



	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

- How do we treat Long term assets withing an organisation ?
 - Small assets such as stationary etc would be charged straight to profitability and reduce the profit of the business
 - Large Long term are expense and treated as an asset within the business , these usually have an expected useful life of more than 1 year.
 - Concept of Depreciation

Financial Statements



	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

In this example , we have purchased New Machinery for £100,000 with a useful life to the business of 5 years , no residual value at the end of the project.

Straight Line Depreciation

	Income Statement	Balance Sheet
Year 0		100,000
Year 1	20,000	80,000
Year 2	20,000	60,000
Year 3	20,000	40,000
Year 4	20,000	20,000
Year 5	20,000	0

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

For this example , the cash would be adjusted by the depreciation to attain the yearly profit of the project.

Cash In	£	Depreciation	Profit
1	35,000	(20,000)	15,000
2	35,000	(20,000)	15,000
3	35,000	(20,000)	15,000
4	35,000	(20,000)	15,000
5	35,000	(20,000)	15,000

	Year									
Project	0	1	2	3	4	5	NPV	IRR	PI	BCR
A	(100,000)	35,000	35,000	35,000	35,000	35,000	32,678	22.1%	1.33	0.33

Another way to calculate

The machinery is purchased in Year 0 at £100k and has no residual value at the end of the project.

We know the cashflows for the life of the project is £35k per annum

Cashflows totals £175k

Machinery value in year 0 is £100k and at the end of year 5 is 0

Depreciation charge of £100k

Project Net Income = Total Cashflows £175k less Depreciation of £100k = £75k

So what would be the Net Income if the residual value was £20k at the end of year 5

Total Cashflows £175k less Depreciation of £80k = £95k

Financial Appraisals Tools

Accounting Rate of Return (ARR)

- ARR measures the annual operating profit over the average investment as a percentage
- The ARR is calculated

$$\text{Annual Rate of Return} = \frac{\text{Average Annual Profit}}{\text{Average Investment}} \times 100\%$$

- The average investment being (initial investment + future residual value)/2

Financial Appraisals Tools

Accounting Rate of
Return (ARR)

Video Link

[\(73\) Accounting Rate of Return \(ARR\) - YouTube](#)

Accounting Rate of
Return (ARR)

Annual Rate of Return

=

Average Annual Profit

Average Investment

x

100%

- Exercise together
- Project A has an investment requirement for a new machine of £50,000 with a residual value after 5 years of £5,000.
- The Expected Net Cashflows are as follows :

	Net Cash Flow
Year 1	10,000
Year 2	20,000
Year 3	30,000
Year 4	30,000
Year 5	10,000

Step by Step process

- Calculate the Total Net Income
- Calculate the Average Investment
- Calculate the ARR for each project

Total Cashflows	100,000
Depreciation	45,000
Net Income / Profit	55,000

Initial Investment	50,000
Residual Value	5,000
Average Investment	27,500

Total Net Income	55,000
Average Net Income	11000
Average Investment	27500

ARR	40%
-----	-----

Accounting Rate of Return (ARR)

- **Strengths**

- Simple calculation
- Offers a quick comparator against companies expected return.

- **Weaknesses**

- Ignore the future value of money
- The Salvage value may not be realistic
- It is based on accounting profits and not cashflow

Payback Period

- Concentrates on Cashflow
- Simple Calculation
- Ignores Future Value of Money
- How long before the initial investment is repaid

Versus

Accounting Rate of Return (ARR)

- Concentrates on Net Profit
- Simple Calculation
- Ignores Future Value of Money
- Residual Value may not be realistic

Financial Appraisals Tools



Next Week

R&D Tax Credit Presentation