

Finance Management & Planning

Project Appraisal (week 3)

- Last Week
 - Any Questions on Payback
- This week Outcomes
 - Exploration and use of Project Appraisal Tools that utilise the Future value of Money
 - NPV
 - Internal Rate of Return

- 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

- Time Value of Money

As an Example

Your company have offered you a bonus as below :-

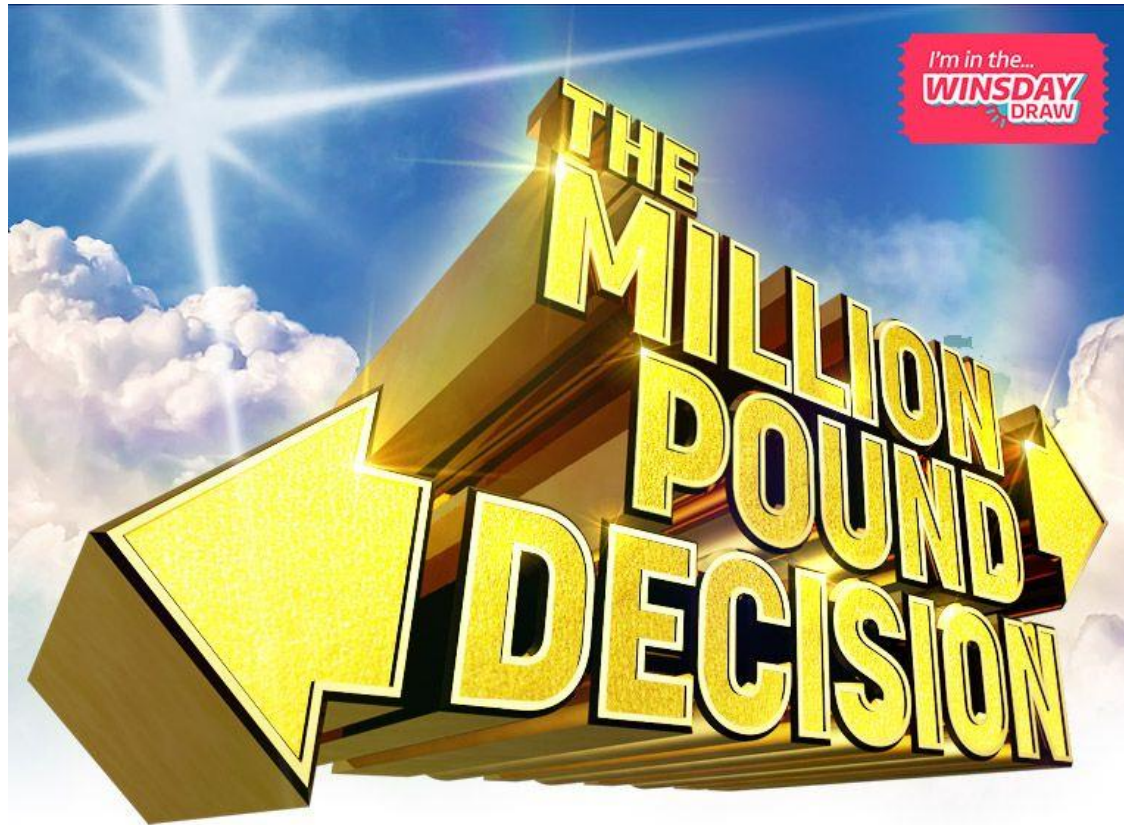
Received this Month	£5,000
Receive in 12 Months	£6,000
Receive in 2 years	£7,000

Other Factors to consider :-

Inflation	5%
Bank Interest	3%

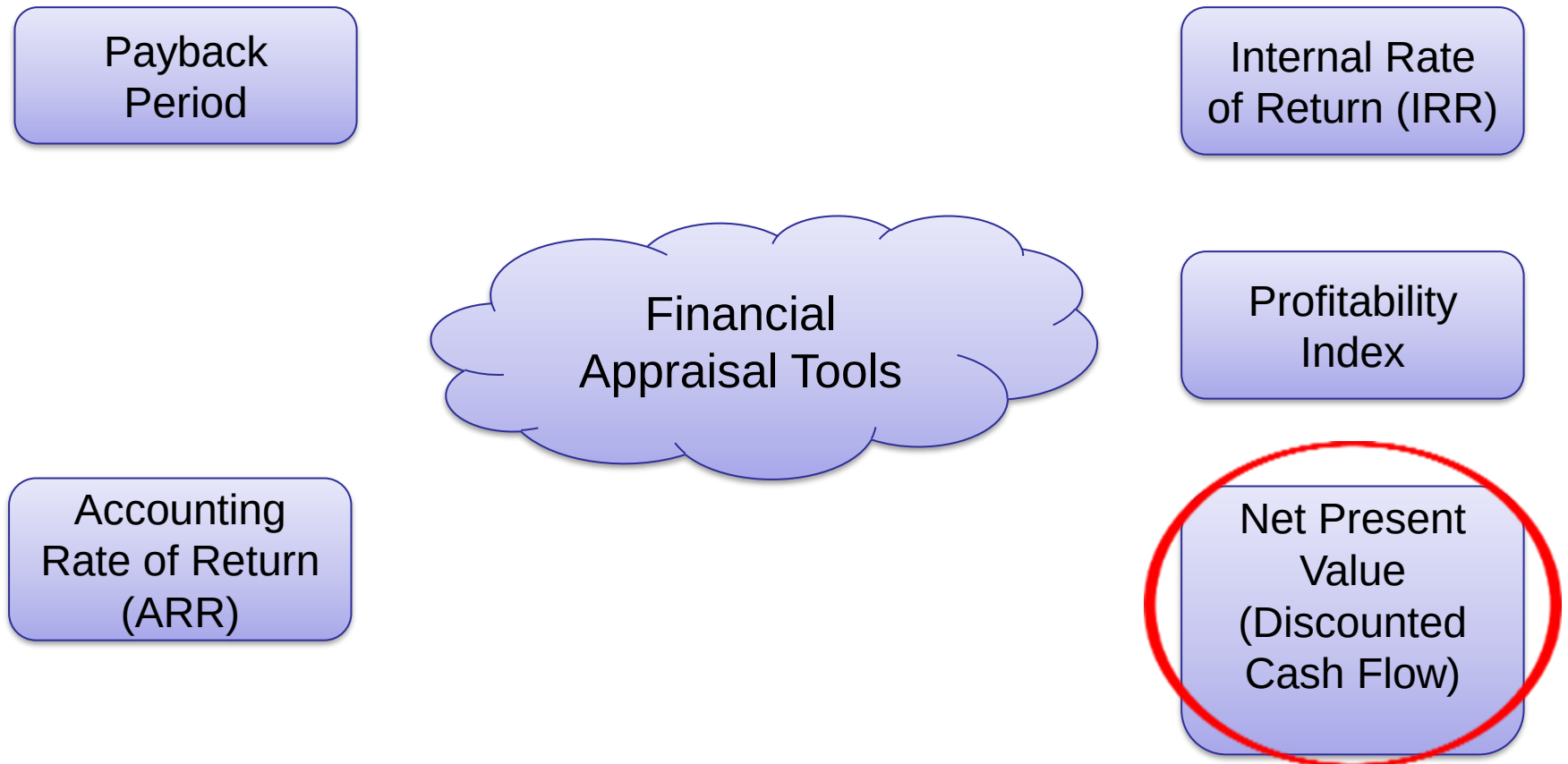
Which would you rather ?

Reasons ?



- The Million Pound decision could be all yours! What would you do - take £1 million now or get a £10,000 payout every month for 10 years?

Financial Appraisals Tools



Financial Appraisals Tools

Net Present Value (Discounted Cash Flow)

- Net Present Value explores Cashflow In and Outs of a project with an adjustment for the Future value of money based on a discounted rate also called the Weighted average cost of Capital adjustment (WACC).
- A Positive Net Present Value calculation shows the project adds value to the organisation.
- Net Present Value adjusts the Cash Value of each year with the following formula.

$$NPV = \text{Cashflow} / ((1 + \text{discount rate})^{\text{time periods}})$$

See table in chat area.....

Net Present Value (Discounted Cash Flow)

Example

Project A has an investment of £10,000 with a cashflow In of £4000 per annum and a company discounted rate (WACC) of 8% for project evaluation.

Project A

	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(10,000)	4000	4000	4000	4000	4000

Calculate the Payback Period ?

Payback	2.5 Years
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Example

Project A has an investment of £10,000 with a cashflow In of £4000 per annum and a company discounted rate (WACC) of 8% for project evaluation.

Project A

	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(10,000)	4000	4000	4000	4000	4000

Discount Rate (WACC)	8%					
Denominator	1.000	0.926	0.857	0.794	0.735	0.681

Future Value	(10,000)	3,704.00	3,428.00	3,176.00	2,940.00	2,724.00
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NPV	5,972
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Positive NPV so project could achieve approval

What would happen if the Company Discount Rate was 15% ?

Example

Project A has an investment of £10,000 with a cashflow In of £4000 per annum and a company discounted rate (WACC) of 15% for project evaluation.

Project Appraisal

	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(10,000)	4000	4000	4000	4000	4000

Payback	2.5 yrs
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Discount Rate (WACC)	15%
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Denominator	1.000	0.870	0.756	0.658	0.572	0.497
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Future Value	(10,000)	3,480.00	3,024.00	2,632.00	2,288.00	1,988.00
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NPV	3,412
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Net Present Value (Discounted Cash Flow)

- Example

	Project A	Project B
• Project Investment	£10,000	£500,000
• Net Cash Flow per year	£ 5,000	£166,667
• Payback Period	2 years	3 Years

- The company has a WACC / Discount Rate of 15% for reviewing projects.

- Each Project has a 5 year life span

- Calculate the NPV

Project Appraisals

Net Present Value (Discounted Cash Flow)

Excel has an inbuilt NPV Function

Project A						
	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(10,000)	5,000	5,000	5,000	5,000	5,000
Payback	2 Year					
Discount Rate	15.00%					
Denominator	1.00	0.870	0.756	0.658	0.572	0.497
Future Value	(10,000)	4,350	3,780	3,290	2,860	2,485
NPV	6,765					

Project B						
	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(500,000)	166,667	166,667	166,667	166,667	166,667
Payback	3 Years					
Discount Rate (WACC)	15.00%					
Denominator	1.00	0.870	0.756	0.658	0.572	0.497
Future Value	(500,000)	145,000	126,000	109,667	95,334	82,833
NPV	58,834					

Project Appraisals

Project A

	Investment	Yr1	Yr2	Yr3	Yr4	Yr5
Present Value	(10,000)	4000	4000	4000	4000	4000
Payback	2.5 Years					
Discount Rate (WACC)	8%					
Denominator	1.00	0.926	0.857	0.794	0.735	0.681
Future Value	(10,000)	3,704.00	3,428.00	3,176.00	2,940.00	2,724.00
NPV	5,972					

Excel Formula

=(Investment + NPV(Discount Rate,Yr1 to Yr5))

NPV (Excel Calculated)	5,971
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Net Present Value (Discounted Cash Flow)

- Exercise
- Company Discounted Rate (WACC) is 8%
- Calculate the NPV based on the following 3 projects using the model and Excel
- Which project should proceed and why ?

Project	Investment	1	2	3	4	5	NPV
A	(100,000)	25000	25000	25000	25000	25000	-182
B	(100,000)	5000	20000	25000	30000	45000	-5,701
C	(100,000)	45000	35000	30000	10000	5000	6,242

Discount Rate (WACC)	8%
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Net Present Value (Discounted Cash Flow)

•Strengths

- Takes account of the time value of money
- Informs whether the project will add value to the organisation
- Excel simplifies the process

•Weaknesses

- How do you define your company's cost of capital
- Doesn't allow for a clear comparison of different size projects

Any questions on todays lecture ?

Next week

- IRR
- Capital Rationing