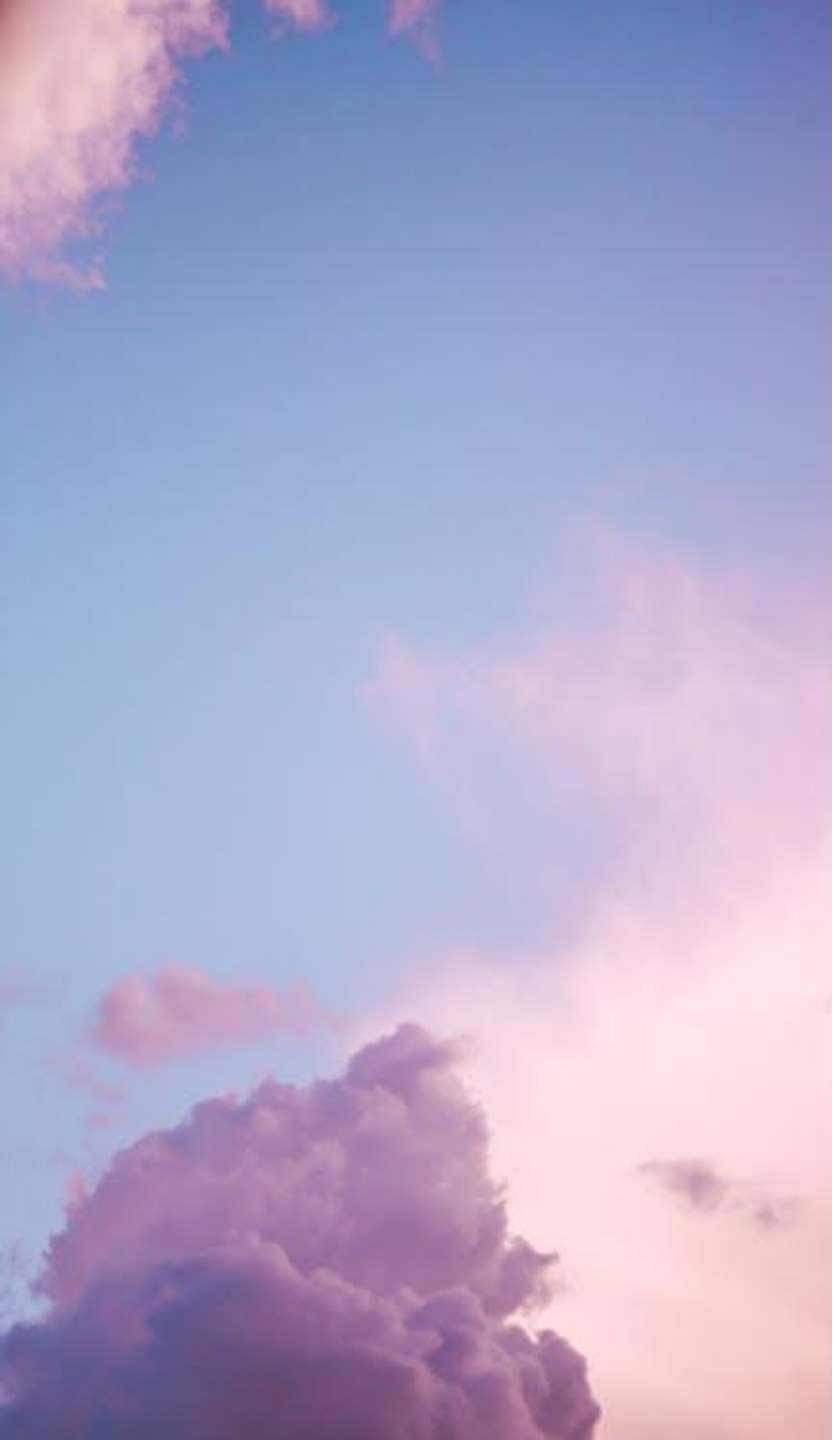

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Debt versus Equity

- Fixed Claim
- High Priority in Financial Trouble
- Fixed Maturity
- Full Legal Backup for Debtholders
- Ask for Mortgage/Collateral
- No Management Control
- Tax Deductible

- Residual Claim
- Lowest Priority in Financial Trouble
- Infinite Life
- No Legal Backup for Shareholders
- No requirement for Mortgage
- Management Control
- Not Tax Deductible

Debt
Bank Loan
Commercial Paper
Corporate Bond

Hybrid Securities
Convertible
Preferred Stock

Equity
Venture Capital
Common Stock

Example - Gearing

The long-term capital structures of three new businesses, Lee Ltd, Nova Ltd, and IBA Ltd are as follows:

	Nova Ltd	*IBA Ltd*	*Lee Ltd*
	£	£	£
£1 share (OE)	100,000	200,000	300,000
10% loan	200,000	100,000	0
	300,000	300,000	300,000
Annual Interest expense	10,000	0	20,000

- **Net Profit = EBIT-Interest-Tax**
- **Gearing Ratio = D/D+E**
- **Interest Coverage Ratio = EBIT/Interest**
- **Return on Equity = NP/OE**

	Lee	Nova	IBA
Earnings before Interest and Tax (EBIT)	50,000	50,000	50,000
(-) Interest (10%)	20,000	10,000	0
Earnings Before Tax (EBT)	30,000	40,000	50,000
(-) Tax (30%)	9,000	12000	15,000
Net Profit	**21,000**	**28,000**	**35,000**
Gearing Ratio	200/(200+100) =66.66%	100/(100+200) =33.33%	0/300 =0%
Interest Coverage Ratio	50000/20000 =2.5 times	50000/10000 =5 times	50000/0 = NA
Return on Equity	21000/100,000 =21%	28000/200,000 =14%	35000/300,000 =11.67%

Tax Deductibility of Interest

IBA Limited's Tax Expense	€ (15,000)
Lee Limited's Tax Expense	€ (9,000)
Tax Savings by Lee Limited	€ 6,000

This is also known as the Interest Tax Shield

IBA & Lee Limited would have this tax expense had Lee not taken the debt

Lee Limited's Interest Expense	€ (20,000)
Tax Savings by Lee Limited	€ 6,000
Net Cost	€ (14,000)

$$Cost\ of\ Debt = \frac{14{,}000}{200{,}000}$$
$$= 7\%$$

Calculate Cost of Debt

After Tax cost of Debt

= Before Tax cost of debt* (1-t)

=10%(1-.3)

=7%

Lee Ltd (Gearing 66.66%)	D= 200000 E= 100000	Lee Ltd (Gearing 66.66%)	D= 200000 E=100000	Lee Ltd (Gearing 66.66%)	D= 200000 E=100000
EBIT	100000	EBIT	25000	EBIT	10000
Interest Pmt	20000	Interest Pmt	20000	Interest Pmt	20000
EBT	80000	EBT	5000	EBT	10000
Tax (30%)	24000	Tax (30%)	1500	Tax (30%)	3000
Net Profit	56000	Net Profit	3500	Net Profit	-7000
OE	100000	OE	100000	OE	100000
ROE	56.00%	ROE	3.50%	ROE	-7%

Learning Objective 2

Economic Profit vs Accounting Profit

Measures of Return: Earnings versus Cash flows

- The income figure reported in the income statement might be more or less than the cash balance during the period.
- Use cash flows rather than earnings. You cannot spend earnings.
- Use **"incremental"** cash flows relating to the investment decision. Incremental cash flow is the additional operating cash flow that an organization receives from taking on a new project. A positive incremental cash flow means that the company's cash flow will increase with the acceptance of the project.
- Use "time weighted" returns, i.e., value cash flows that occur earlier more than cash flows that occur later.

Measures of Return: Earnings versus Cash flows

Principles Governing Accounting Earnings Measurement

Accrual Concept:

Show revenues when products and services are sold or provided, not when they are paid for.

Matching Principle:

All expenses of a particular accounting period must be matched with the relevant income of that period, irrespective of the matter whether they're paid or received in cash.

If expenses are not properly recorded in the correct period, the net income for a particular period may be either understated or overstated.

Operating versus Capital Expenditures:

Only expenses associated with creating revenues in the current period should be treated as operating expenses.

Expenses that create benefits over several periods are written off over multiple periods as depreciation or amortization.

Earnings versus Cash flows

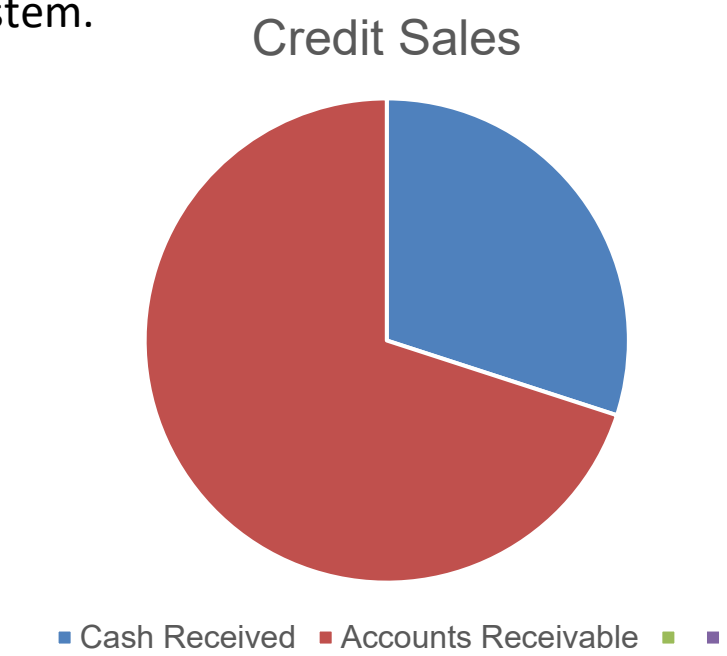
Limitations of Accrual-Based Accounting Information

Accrual accounting is the accepted way of recording and reporting financial activities. But financial decisions cannot solely be based on information generated through accrual based accounting system.

Example 1: Credit Sales

Credit Sales According to revenue recognition principle, we record revenue whenever earned. But generally a part of this is on credit.

For example, Orion Beverages sells $230,000 worth of beverages in first quarter. However, 70% of this on credit. As a result, the income statement shows the entire **$230,000** as earnings.



But the company received cash worth only **$69,000** (230,000 * 30%)

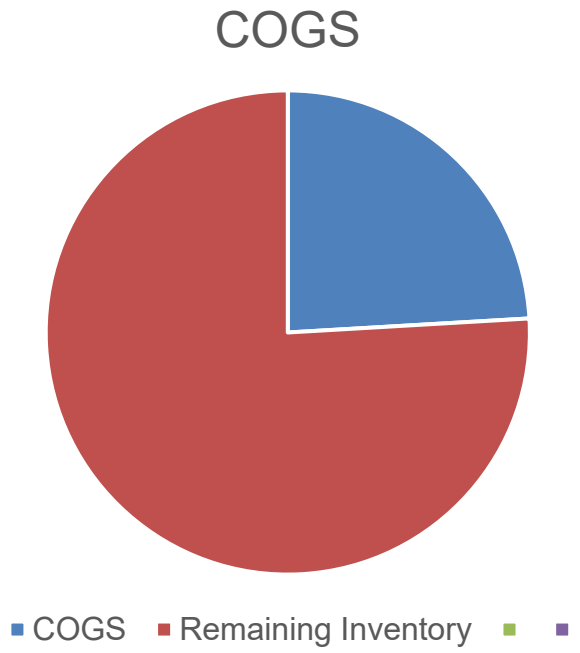
Earnings versus Cash flows

Limitations of Accrual-Based Accounting Information

Accrual accounting is the accepted way of recording and reporting financial activities. But financial decisions cannot solely be based on information generated through accrual accounting methods.

Example 2: COGS

Cost of Goods Sold according to matching principle, we deduct cost of goods sold from revenue. But the company might pay for the entire inventory/stock purchased.



For example, Orion Beverages purchased $540,000 worth of inventory but sold only $130,000 worth of inventory. Income statement will show only **$130,000** as COGS.

However, the company actually had a cash outflow of **$540,000** for the purchase of this inventory.

Earnings versus Cash flows

Limitations of Accrual-Based Accounting Information

Accrual accounting is the accepted way of recording and reporting financial activities. But financial decisions cannot solely be based on information generated through accrual accounting methods.

Example 3: Depreciation

Depreciation is a cost allocation system. For example, purchase of machine is distributed across the life of the asset. However, the cash payment is made entirely in the beginning. As a result, income statement profit and original cash flows will differ.

For example, Orion Beverages purchased generator worth $200,000 with an estimate useful like of 10 years and no salvage value. So the company paid cash worth **$200,000**.

But only 200,000/10= **$20,000** will be deducted in the income statement for the next 10 years.

Earnings versus Cash flows

Limitations of Accrual-Based Accounting Information

Accrual accounting is the accepted way of recording and reporting financial activities. But financial decisions cannot solely be based on information generated through accrual accounting methods.

Because of accrual based accounting system,

$$\text{Revenues} - \text{Expenditure} \neq \text{Cash inflow} - \text{Cash outflow}$$

The amount of cash collected from revenues may be higher or lower than revenues earned. The amount of cash paid for expenditure may be higher or lower than expenditure accounted for and showed in income statement.

3 Types of Expenditures

1. *Capital Expenditure (CAPEX)*
2. *Operating Expenditure (OPEX)*
3. *Financing Expenditure (FINEX) captured through WACC*

Net Present Value (NPV) considers all of these and adjusts for time-value.

Income Statement for the year ended June 30, 2021		
Sales Revenue:		220
Cost of Goods Sold (COGS):		125
Gross Profit		**95**
Operating Expenses:		
Salary expense	15	
Utilities expense	15	
Rent expense	15	
Depreciation	18	
Total Operating Expenses		63
Operating Profit/ Earnings Before Interest & Tax		32
Interest Payment		12
Earnings Before Tax		20
Tax for the year @ 40%		8
Net income after tax		12

Income Statement for the year ended June 30, 2021		
Sales Revenue:		220
Cost of Goods Sold (COGS):		125
Gross Profit		**95**
Operating Expenses:		
Salary expense	15	
Utilities expense	15	
Rent expense	15	
Depreciation	18	
Total Operating Expenses		63
Operating Profit/ Earnings Before Interest & Tax		32
Interest Payment (Debtholders)		12
Earnings Before Tax		20
Tax for the year @ 40% (Government)		8
Net income after tax (Equity holders)		12

Income Statement for the year ended June 30, 2021		
Sales Revenue:		220
Cost of Goods Sold (COGS):		125
Gross Profit		**95**
Operating Expenses:		
Salary expense	15	
Utilities expense	15	
Rent expense	15	
Depreciation	18	
Total Operating Expenses		63
Operating Profit/ Earnings Before Interest & Tax		50
Interest Payment (Debtholders)		12
Earnings Before Tax		38
Tax for the year @ 40% (Government)		15.2
Net income after tax (Equity holders)		22.8

Portion of Different Expenses Covered in the Incomes Statement

Particulars	Fully Covers	Partially Covers	Does not Cover at all
Operating Expenses			
Capital Expenses			
Financing Expenses			

Portion of Different Expenses Covered in the Incomes Statement

Particulars	Fully Covers	Partially Covers	Does not Cover at all
Operating Expenses	✓		
Capital Expenses		✓	
Financial Expense		✓	

Income Statement for the year ended June 30, 2021			
Sales Revenue:			220
Cost of Goods Sold (COGS):			125
Gross Profit			**95**
Operating Expenses:			
Salary expense	*Full OPEX*	15	
Utilities expense	*Full OPEX*	15	
Rent expense	*Full OPEX*	15	
Depreciation	*Partial CAPEX*	18	
Total Operating Expenses			63
Operating Profit/ Earnings Before Interest & Tax			32
Interest Payment	*Partial FINEX*		12
Earnings Before Tax			20
Tax for the year @ 40%			8
Net income after tax			12

Delta Footwear Limited

Scenario #1

Capital Structure

Source	Cost	Amount	% weight
Ordinary Shares (cost of equity or ke)	15%	200,000	66.7%
Loan (Cost of debt or kd)	10%	100,000	33.3%
Total capital		**300,000**	**100.0%**

Earnings

Earings before Interest and Taxes (EBIT)		50,000
Less: Interest Expense (10%*100,000)		10,000
Earnings before Taxes (EBT)		40,000
Less: Taxes (30%*40,000)		12,000
Net profit (i.e., Accounting Profit)		**28,000**
Less: Cost of Equity (15%*200,000)		30,000
Economic Profit	**-**	**2,000**

Accounting Profit Does Not Take Cost of Equity Into Consideration.
Economic Profit Does Consider this.

Delta Footwear Limited

Scenario #2

Capital Structure

Source	Cost	Amount	% weight
Ordinary Shares	15%	300,000	100.0%
Loan	10%	-	0.0%
Total capital		**300,000**	**100.0%**

Earnings

Earings before Interest and Taxes (EBIT)		50,000
Less: Interest Expense (10%*0)		-
Earnings before Taxes (EBT)		50,000
Less: Taxes (30%*50,000)		15,000
Net profit (i.e., Accounting Profit)		**35,000**
Less: Cost of Equity (15%*300,000)		45,000
Economic Profit	-	**10,000**

Delta Footwear Limited

Scenario #3

Capital Structure

Source	Cost	Amount	% weight
Ordinary Shares	15%	100,000	33.3%
Loan	10%	200,000	66.7%
Total capital		**300,000**	**100.0%**

Earnings

Earings before Interest and Taxes (EBIT)	50,000
Less: Interest Expense (10%*200,000)	20,000
Earnings before Taxes (EBT)	30,000
Less: Taxes (30%*30,000)	9,000
Net profit (i.e., Accounting Profit)	**21,000**
Less: Cost of Equity (15%*100,000)	15,000
Economic Profit	**6,000**

Learning Objective 3

Investment Decision Making Process in Finance

Investment/Project Appraisal

- Investment appraisal is the process of assessing a project's **financial viability in a structured way**.
- In investment appraisal, **we use cash flows rather than earnings**. You cannot spend earnings.
- From financial perspective, 2 important concepts related to investment appraisal are:
  - Free Cash Flow (FCF) and
  - Weighted Average Cost of Capital (WACC)

3 Types of Expenditures

1. *Capital Expenditure*
2. *Revenue/ Operating Expenditure*
3. *Financing Expenditure captured through WACC*

- *Considers the concept of TVM*

Definition and Significance of FCF

- **The Free Cash Flow (FCF) is the cash generated by the company after deducting capital expenditures from its operating cash flow.**
- Free cash flow measures a company's ability to generate cash.
- The presence of free cash flow indicates that a company has cash to expand, develop new products, buy back stock, pay dividends, or reduce its debt.
- High or rising free cash flow is often a sign of a healthy company that is thriving in its current environment.
- Net present value of free cash flows coming from a project tells the shareholders how much value that project will add to the organization.

FCF Calculation (FCF to Firm Approach)

Sales/Revenues from operations

- COGS (Cost of Goods Sold- labor, material)

- SG&A (Selling, General, Administrative Expenditures)

-Depreciation expense (Deducted due to the purpose of preparing the income statement)

EBIT (Earnings Before Interest and Taxes i.e. Operating Profit)

- Tax

NOPAT (Net Operating Profit After Taxes)

+ Depreciation expense (Added back as it is a non-cash expense)

- CAPEX (Reduces the amount of cash available to the capital providers)

+/- Change in working capital

FCF *(*Free *cash flows to capital providers)*

FCF Calculation (FCF to Equity Approach)

Sales (Revenues from operations)

- COGS (Cost of Goods Sold- labor, material)

- SG&A (Selling, General, Administrative costs)

-Depreciation expense (Deducted to prepare the income statement)

EBIT (Earnings Before Interest and Tax)

-Interest Payment (Deducted to find the income available only to equity owners)

EBT

- Tax

Net Profit

+ Depreciation expense (Added back since it is non cash expense)

- CAPEX (outgoing cashflow due to capital investment)

+/- Change in working capital

- Debt Principal Payment (Deducted to find the income available only to equity owners)

FCF available to equity holders

Interest expense is not brought into the treatment since FCFF is the free cash flow available to all the capital providers of the firm. And interest is accrued to the debtholders, one of the capital suppliers of the firm.

- Interest Payment
- Principal payment
- Return to Shareholders

Free Cash Flow to the Firm (FCFF) Calculation

Particulars	Year 1	Year 2	Year 3	Year 4
Sales	1000	1313	896	1000
COGS	-400	-525.2	-358.4	-400
SG&A	-362.5	-362.5	-362.5	-362.5
Depreciation	-70	-70	-70	-70
EBIT	167.5	355.3	105.1	167.5
Tax @20%	-33.5	-71.06	-21.02	-33.5
NOPAT	134	284.24	84.08	134
Depreciation Add Back	70	70	70	70
CAPEX	-50	-50	-50	-50
Change in NWC	-4	-4	-4	-4
FCFF	**150**	**300**	**100**	**150**

Step 1: FCFF Calculation

The formula for FCFF is:

$$\text{FCFF} = \text{NOPAT} + \text{Depreciation} - \text{CAPEX} - \text{Change in NWC}$$

Using the provided table:

1. **NOPAT (Net Operating Profit After Tax):**
   $$\text{NOPAT} = \text{EBIT} \times (1 - \text{Tax Rate})$$
   For example, for Year 1:
   $$\text{NOPAT} = 167.5 \times (1 - 0.2) = 134$$
2. **Add Back Depreciation:** Depreciation is a non-cash charge, so we add it back (constant at 70 for all years).
3. **Subtract CAPEX (Capital Expenditures):** This remains constant at -50 for all years.
4. **Subtract Change in NWC (Net Working Capital):** This is constant at -4 for all years.

   Year 1 Example:

   $$\text{FCFF} = 134 + 70 - 50 - 4 = 150$$

   Repeat this for Years 2, 3, and 4 to get the FCFF values.

Step 2: Discounting FCFF to Present Value

The formula for discounting cash flows is:

$$\text{PV of FCFF} = \frac{\text{FCFF}_t}{(1 + \text{WACC})^t}$$

Where t is the year and WACC (Weighted Average Cost of Capital) is given as 13.33% (0.1333).

Example for Year 1:

$$\text{PV of FCFF} = \frac{150}{(1 + 0.1333)^1} = \frac{150}{1.1333} = 132.35$$

Perform similar calculations for all years.

Step 3: Summing Discounted Cash Flows

Sum up all the present values of FCFF:

$$\text{Total Discounted Cash Flows} = \text{PV of Year 1} + \text{PV of Year 2} + \text{PV of Year 3} + \text{PV of Year 4}$$

Using the values from the second image:

- Year 1: 132.35
- Year 2: 233.56
- Year 3: 68.70
- Year 4: 90.92

$$\text{Total Discounted Cash Flows} = 132.35 + 233.56 + 68.70 + 90.92 = 525.53$$

Step 4: Calculate NPV

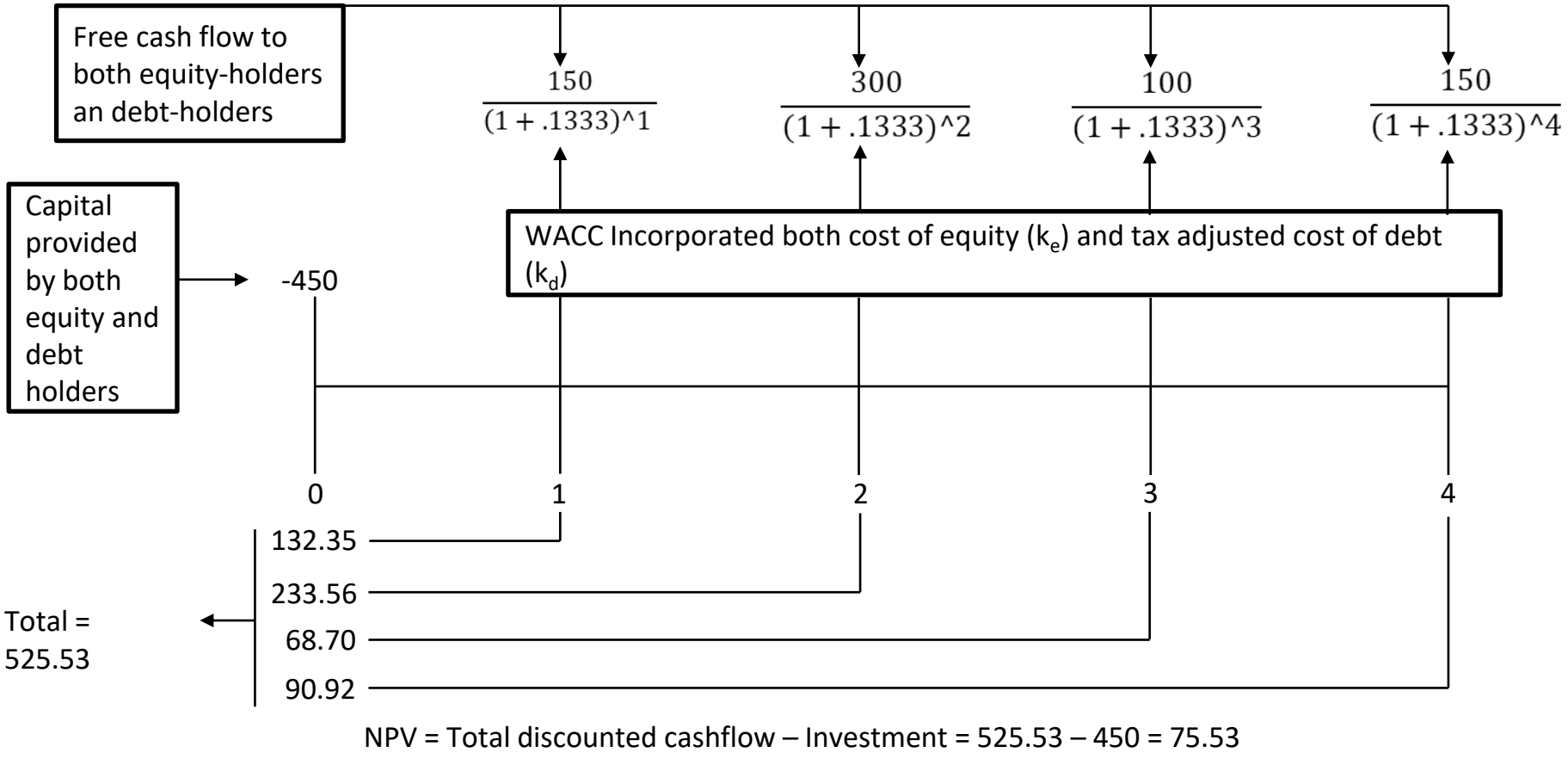
The formula for NPV is:

$$\text{NPV} = \text{Total Discounted Cash Flows} - \text{Initial Investment}$$

From the image, the **initial investment** is -450.

$$\text{NPV} = 525.53 - 450 = 75.53$$

Free Cash Flow to the Firm (FCFF)



NPV = Total discounted cashflow – Investment = 525.53 – 450 = 75.53

Question???

- Which measure is more robust, conservative and comprehensive between the accounting-based profitability measure - Net Profit and Finance finance-based profitability measure NPV?
  - OPEX
  - CAPEX
  - FINEX
  - Change in Working Capital
  - Time Value of Money

Question???

- Which measure is more robust and comprehensive between Net Profit and NPV?

	Net Profit	***NPV***
OPEX	Fully	Fully
CAPEX	Partially	Fully
FINEX	Partially	Fully
Change in Working Capital	Does not Consider	Considers
Time Value of Money	Does not Consider	Considers

Thanks a lot

for your time and patience.