FIN 2704/2704X

Week 9 Slides

Relevant Cash Flows

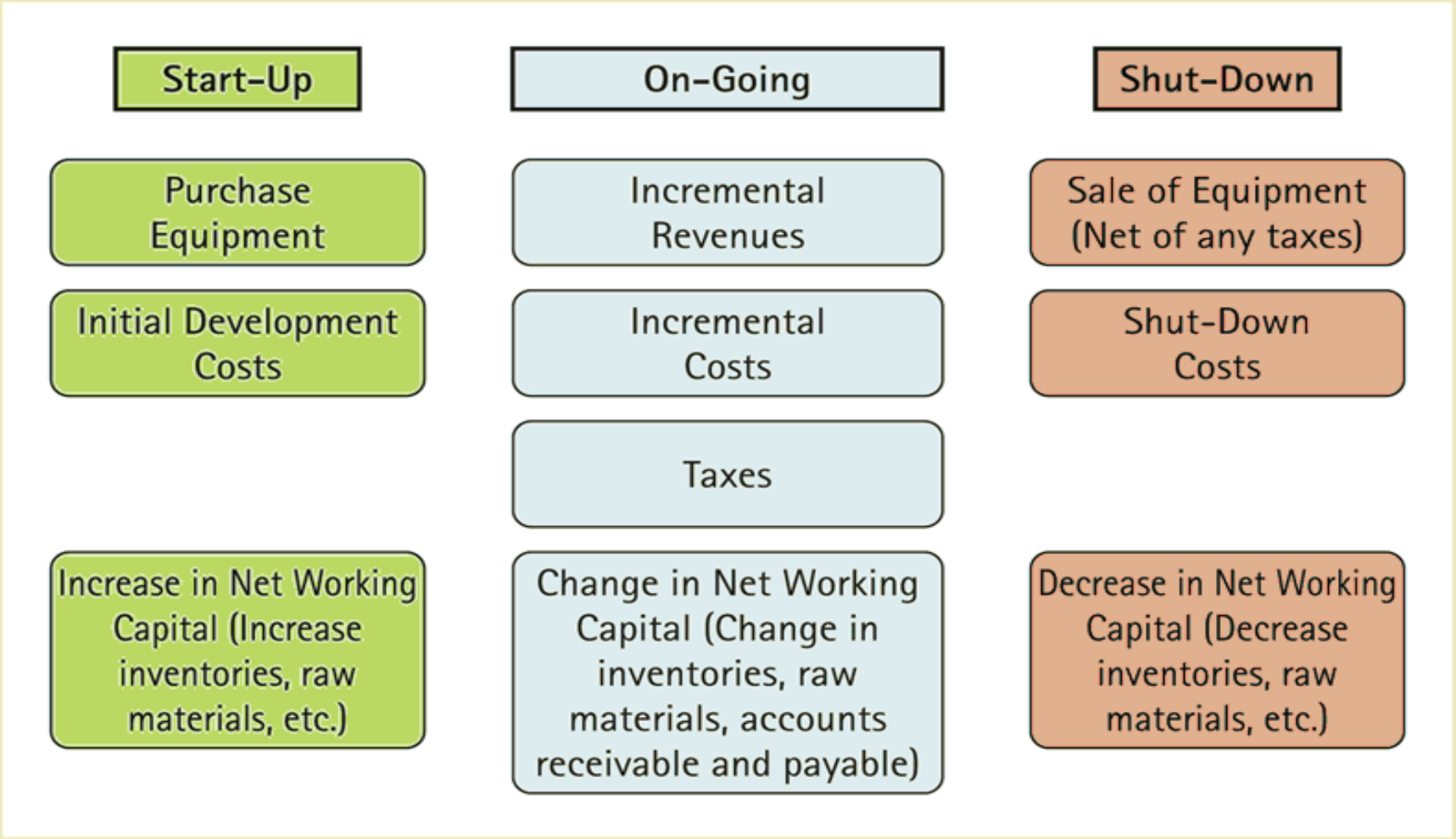
Learning objectives

- Understand how to determine the **relevant net cash flows** for capital budgeting decisions
- Use the relevant discount rate: Understand the role of WACC.

NPV Analysis: Best Decision Method

- We have concluded that NPV was the best capital budgeting decision method to apply. Recall that NPV involves the evaluation of various capital investment proposals by examining:
  1. All the project's expected cash inflows and outflows
  2. Estimating the required rate of return (which takes into account risk, time value of money, etc.)
     - Use this to find the PV of the cash inflows and outflows
- Evaluating the present value of the projected cash flows (CFs) gives management a valid criterion for choosing those projects or activities that promise the most value accretion to the organization
- Now, we focus on **estimating the relevant project cash flows**

Cash Flows in a *Typical* Project



Source: *Berk (Chapter 8)*

Relevant Cash Flows

- In finance, costs and benefits associated with a capital budgeting project are measured in terms of ***cash flows*** rather than accounting earnings

- **Depreciation**:
  - In accounting, upfront cash outflows to purchase and set-up equipment are not recognized as expenses in year 0. Instead, the cash outlay appears as a depreciation expense over the course of the equipment's useful life
  - However, depreciation expenses do not correspond to actual cash outflows
  - This accounting and tax treatment of capital expenditures is one of several key reasons why accounting earnings are not an accurate representation of actual cash flows

Relevant Cash Flow

- **Taxes** are relevant and must be considered
  - All cash flows must be measured on an after-tax basis
- **Changes in Net Operating Working Capital** – these changes are highly relevant as they result in cash outflows (or inflows) yet don't appear on the Income Statement
- **Incremental**: Cash flows must be on an **incremental** (or marginal) basis
  - Incremental cash flows are firm's cash flows when undertaking the project **minus** the firm's cash flows if not undertaking the project
  - The cash flows that should be included in a capital budgeting analyses are only those that will occur if the project is accepted
    - "Will this cash flow occur *ONLY* if we accept the project?"

Types of Cash Flow Effects

- **Sunk costs** – costs that have accrued in the past. They cannot be altered by present decisions and thus are not relevant
- **Opportunity costs** – costs of next best alternative option which must be forgone by taking the project (relevant)
  - E.g., use piece of land to build a factory, but if didn't build factory, could have sold the piece of land → You give up a benefit by keeping it
- **Side effects** (or **Externalities**)
  - Positive side effects – benefits to other firm projects.
  - Negative side effects – costs to other projects, e.g., erosion/ "cannibalization"
- **FINANCING COSTS**: *IGNORE* in estimating CASH FLOWS, thus exclude interest expense ***and*** the tax effect of interest expense in estimating projected cash flows and CFFAs.

Specific Issues: Financing Effects

- A firm's **Weighted Average Cost of Capital (WACC)** is defined as follows:

$$WACC = r_D * (1 - T_C) * \frac{D}{V} + r_E \frac{E}{V}$$

  - r_D is the firm's required rate of return on debt
  - r_E is the firm's required rate of return on equity
  - T_C is the marginal corporate tax rate
  - D, E and V are the market values of the firm's Debt, Equity and Total Value (D+E), respectively.

- WACC takes into account the firm's **after-tax** equity and debt financing costs in the market value weightage in which they are held

Specific Issues: Financing Effects

i. When considering a corporate project **and**

ii. When using the corporate valuation model,

(which means we are looking at cash flows generated to the corporation as a whole), then

- Dividends and interest expense should **NOT** be included in the estimate of relevant cash flows

This is because when evaluating projects and when using the corporate valuation model, financing effects are taken into consideration in the discount rate used, not in the cash flow estimates. When discounting the firm's cash flows and/or a firm's project cash flows, we use the firm's WACC.

Specific Issues: Financing Effects

Thus, recall that NPV represents the addition to value/wealth from undertaking a particular project/acquisition/investment. It corresponds with the objective of maximizing value.

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \ldots + \frac{C_n}{(1+r)^n}$$

The appropriate risk adjusted discount rate r, when valuing a firm's total net cash flows and/or its project net cash flows, is the firm's WACC.

$$r = WACC = r_D * (1 - T_C) * \frac{D}{V} + r_E \frac{E}{V}$$

Note that the WACC weights are of the after-tax cost of debt and the after-tax cost of equity.

- Payments to equity holders are not tax deductible and so after-tax, stay at r_E.
- But payments to debtholders are tax deductible and thus the after-tax cost of debt to the firm is actually $r_D*(1-T_C)$ and not r_D. Thus the tax deductibility of interest lowers the net cost of debt to the firm.

Overall Incremental Project Cash Flows

1. ***Net initial investment outlay***
   - Remember to consider impact on NOWC.
2. ***Future cash flows from assets (operations)*** – on an after-tax basis.
3. ***Cash outflows later required*** to support the initial investment outlay:
   - E.g., Cash flows associated with a major overhaul.
   - E.g., Changes in operating working capital over the life of the project.
4. ***Terminal Year Cash Flows***

- Net salvage value received upon termination of the project.
- Remember to include return of NOWC.

Summary

- In finance, costs and benefits associated with a capital budgeting project are measured in terms of ***cash flows***
  - Cash flows must be on an incremental basis
- Use WACC when discounting the firm's cash flows and/or a firm's project cash flows
  - WACC weights are of the after-tax cost of debt and the after-tax cost of equity

Pro Forma Statements

Learning objectives

Be able to calculate **projected cash flows** from **Pro Forma Financial Statements**

Pro Forma Statements and Cash Flow

- Capital budgeting relies heavily on pro forma (i.e., projected) accounting statements, particularly income statements

- Recall how to compute **CFFA**:
  - First, find Operating Cash Flow (OCF)

    OCF = EBIT* (1-Tax Rate) + depreciation

  - Then consider additional capital spending and changes in NOWC:

    CFFA = OCF – Net Capital Spending (NCS) – Changes in NOWC

CFFA is also known as Free Cash Flow and as Net Cash Flow from Operations

Example A: Pro Forma Income Statement

Sales (50,000 units at $4.00/unit)	$200,000
Variable Costs ($2.50/unit)	125,000
Gross profit	$ 75,000
Fixed costs	12,000
Depreciation ($90,000 / 3)	30,000
EBIT	$ 33,000
Taxes (34%)	11,220
Net Income	$ 21,780

Example A: Projected Capital Requirements

- The initial investment outlay for the project is $90,000 and the cost will be straight-line fully depreciated over the 3-year life.
- A net operating working capital of $20,000 is required throughout the duration of the project. The net operating working capital amount is expected to be fully recovered at the end of the project.

Example A: Projected Capital Requirements

- Now consider the project's net capital spending per year
  - Remember that **Net capital spending = Change in net fixed assets + Depreciation**

- Therefore:
  - In Year 1: NCS = (60,000 – 90,000) + 30,000 = 0
  - In Year 2: NCS = (30,000 – 60,000) + 30,000 = 0
  - In Year 3: NCS = (0 – 30,000) + 30,000 = 0

Example A: Projected Total Cash Flows

	Year			
	0	1	2	3
OCF		$51,780	$51,780	$51,780
Change in NOWC	-$20,000			20,000
Investment Outlays	-$90,000			
NCF	-$110,000	$51,780	$51,780	$71,780

Example A: The Capital Budgeting Decision

- Now that we have the **net cash flows (CFFAs)**, we can apply the evaluation techniques that we learned in Week 8. Assume the discount rate is 20%.
- We can calculate the NPV and/or the IRR of the cash flows using PV factors and/or entering the net cash flows into the <CF> worksheet of a financial calculator.
  - ❖Compute NPV: Answer: ***10,648***
  - ❖Compute IRR: Answer: ***25.8%***
- ***Should we accept or reject the project?*** **Accept**

FYI: Methods for Computing OCF

OCF = EBIT*(1-Tax Rate) + Depreciation

We can always find OCF with the above formula. The 'methods' described below will also give us the *same* result for OCF.

1. Bottom-Up Approach (usable only when there is **no** interest expense)

- OCF = NI + depreciation
- NI = Sales – Costs – Depreciation – Taxes
- Taxes = Tax Rate * (Sales – Costs – Depreciation)

2. Top-Down Approach (usable only when there is **no** interest expense)

- OCF = Sales – Costs – Taxes
- Don't subtract non-cash deductions or interest expense

3. Tax Shield Approach (usable even when there **is** interest expense)

- OCF = (Sales – Costs)(1 – T_C) + Depreciation*T_C

Not only is Depreciation not a cash outflow, but it results in more cash remaining in the firm as it reduces the cash tax payment.

Example: Pro Forma Income Statement

Sales (50,000 units at $4.00/unit)	$200,000
Variable Costs ($2.50/unit)	125,000
Gross profit	$ 75,000
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Depreciation ($90,000 / 3)	30,000
EBIT	$ 33,000
Taxes (34%)	11,220
Net Income	$ 21,780

Example: Methods for Computing OCF

OCF = EBIT*(1 – Tax Rate) + Depreciation = **$51,780**

1. **Bottom-Up Approach** (since no interest, get same answer)
   - OCF = NI + depreciation = $21,780 + $30,000 = **$51,780**
2. **Top-Down Approach** (since no interest, get same answer)
   - OCF = Sales – Costs – Taxes
     = $200,000 – $137,000 – 11,220 = **$51,780**
3. **Tax Shield Approach** (always get same answer)
   - OCF = (Sales – Costs)(1 – T_C) + Depreciation*T_C
     = $(200,000 – 137,000)*0.66 + $30,000*0.34
     = $41,580 + $10,200 = **$51,780**

Recall **CFFA** = OCF – Net Capital Spending – ΔNet Operating Working Capital

Summary

From pro forma financial statements you can calculate the projected total cash flows:

- OCF
- NCS
- Change in NOWC

Depreciation Expense

Learning objectives

Understand how **depreciation expenses** are treated in capital budgeting

Depreciation Expenses

- The depreciation expense used for capital budgeting should be the depreciation schedule required for tax purposes
  - Straight-line depreciation is commonly used
  - Although we will not consider it in this module, accelerated depreciation is an alternative: for example, depreciation schedule for different assets are provided under MACRS (Modified Accelerated Cost Recovery System) used in the U.S.

Depreciation: Be Sure to Reflect Taxes

- Depreciation itself is a non-cash expense.
  - Consequently, it is only relevant because it affects *taxes* (it results in lower taxes payable) and thus it affects cash flows through the depreciation tax shield it creates

Depreciation tax shield = D^*T_C

- D = depreciation expense
- T_C = marginal corporate tax rate

Computing Depreciation

Straight-line depreciation

- **Annual Depreciation**
  - If Full Depreciation Allowed:

    Annual Depreciation = Initial cost/Years

  - If Must Take Salvage Value into Account:

    Annual Depreciation = D = (Initial cost – Salvage) / Years

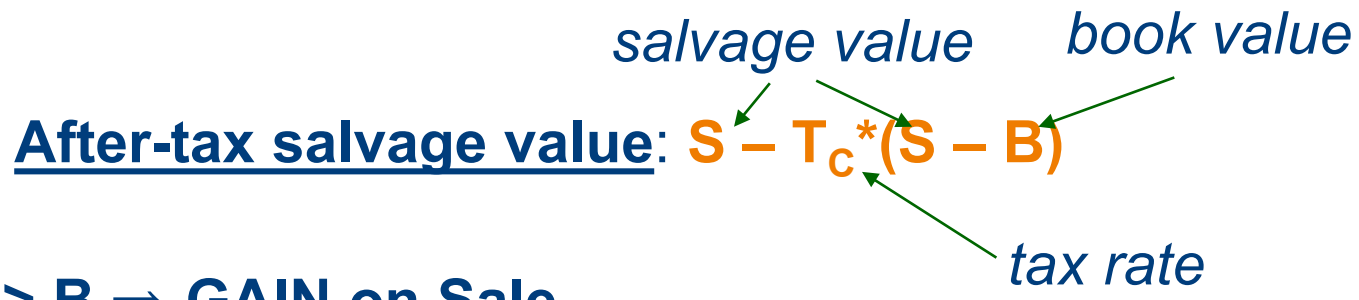
- **Accumulated depreciation**

  = Annual Depreciation D * number of years in use

- **Book Value (B) = Initial cost – Accumulated depreciation**

Net Salvage Value

- If the salvage value is different from the book value of the asset, then there is a tax effect at the end of the project's life



- **If S > B ⇒ GAIN on Sale**
  - ❖ There will be a tax on the gain received: If S>B, net salvage value after tax will be less than salvage value
- **If S < B ⇒** we have a **LOSS on Sale**
  - ❖ There will be a tax savings on the loss incurred
  - ❖ i.e. ***-T_C*(S – B)*** becomes a tax saving (cash inflow): If S<B, net salvage value after tax will be greater than salvage value

Example: Depreciation and After-Tax Salvage

- You purchase equipment for $100,000 and it costs $20,000 to have it delivered and installed. Based on past information, you believe that you can sell the equipment for $12,000 when you are done with it in 6 years. The company's marginal tax rate is 40%.
- What is the depreciation expense each year and the net salvage value in year 6?

Example: Straight-line *FULL* Depreciation

Suppose the appropriate depreciation schedule is straight-line to be fully depreciated:

- D = (120,000 – 0) / 6 = 20,000 every year for 6 years

cost

accum. depreciation

- BV in year 6 = 120,000 – 6(20,000) = 0

BV

- Net Salvage Value = 12,000 – 0.4(12,000 – 0)
  = 7,200

Net After-Tax Cash proceeds

Additional taxes

Example: Straight-line *NOT FULL* Depreciation

- Suppose the appropriate depreciation schedule is straight-line and taking the *estimated salvage value into consideration*:

- D = (120,000 – 12,000) / 6
  = 18,000 every year for 6 years
- BV in year 6 = 120,000 – 6(18,000) = 12,000
- **Net salvage value** = 12,000 - 0.4(12,000 – 12,000)
  = 12,000

Sale proceeds

Additional taxes => here there are no additional taxes

Summary

- The depreciation expense used for capital budgeting should be the depreciation schedule required for tax purposes
  - In this module, use **straight-line depreciation**

- Compute annual depreciation, book-value, net (after-tax) salvage value
  - If the salvage value is different from the book value of the asset, then there is a **tax effect** at the end of the project's life

Capital Spending

Learning objectives

Understand how **capital spending** is treated in capital budgeting

Net Capital Spending

Net Capital Spending =

Ending net fixed assets – Beginning net fixed assets + Depreciation

- Net Capital Spending is money spent on fixed assets less money received from the sale of existing fixed assets
- Net Capital Spending can be negative. When?

Replacement Projects

For a replacement rather than a new project, how would the analysis change?

- Remember that we are interested in incremental cash flows
- If we buy the new machine, then we will sell the old machine
- The incremental cash flows would be the difference in cash flows between the old machine and the new machine.
- Thus our cash flow estimates must reflect all the cash flow consequences of selling the old machine today instead of at the end of its life

Replacement Projects

- If the old machine is sold today, the firm will not receive the salvage value at the end of the machine's life (as it otherwise would have).
  - Not receiving the salvage value of the replaced equipment is an **opportunity cost** of the replacement project.
  - Thus it is important to record the actual salvage value cash inflow to be received upon sale of the old equipment while also taking into account that this results in forfeiting obtaining the salvage value of the equipment some time in the future.
- The relevant annual depreciation expense would be the change in depreciation
  - i.e. the new equipment's depreciation less the old equipment's depreciation
  - This gives the **incremental depreciation**

Example: Replacement Problem

Original Machine

- Initial cost = 100,000
- Annual depreciation = 9000
- Purchased 5 years ago
- Book Value = 55,000
- Salvage today = 65,000
- Salvage in 5 years = 10,000 if don't replace old machine

Opportunity cost

New Machine

- Initial cost = 150,000
- 5-year life
- Salvage in 5 years = 17,000
- Cost savings = 50,000/year
- Straight-line ***full*** depreciation = 30,000

- Required return = 10%
- Tax rate = 40%

Example:
Replacement Problem – Pro Forma Income Statements

Year	1 - 5
Cost Savings	50,000
Depreciation	
New Machine	30,000
Old Machine	9,000
Incremental	21,000
EBIT	29,000
Taxes (40%)	11,600
NI	17,400

relevant

What is the relevant OCF? 17,400 + 21,000 = 38,400

Example:
Replacement Problem – Incremental Net Capital Spending

- **Year 0**
  - ❖ Cost of new machine = 150,000 (***outflow***)
  - ❖ Net salvage value on old machine
    = 65,000 – 0.4(65,000 – 55,000) = 61,000 (***inflow***)

  →Net capital spending = 150,000 – 61,000 = 89,000 (***outflow***)

- **Year 5 (Additional Cash Consequences)**
  - ❖ Net salvage value on old machine
    = 10,000 – 0.4(10,000 – 10,000) = 10,000

  An ***outflow*** because we no longer receive this. It's an opportunity cost.
  - ❖ Net salvage value on new machine
    = 17,000 – 0.4(17,000 – 0) =10,200 (***inflow***)

Note: If we do not sell the machine today, then we will have after-tax salvage of 10,000 in 5 years. Since we do sell the machine today, we LOSE the 10,000 cash flow in 5 years.

Example: Replacement Problem – Cash Flow From Assets

Year	0	1	2	3	4	5
OCF		38,400	38,400	38,400	38,400	38,400
NCS	-89,000					
OppC (Old)						-10,000
NSV(New)						+10,200
ΔNOWC	0					0
NCF	-89,000	38,400	38,400	38,400	38,400	38,600

Example: Replacement Problem – Analyzing the Cash Flows

- Now that we have the cash flows, we can compute the NPV and IRR
  - ❖Enter the cash flows
  - ❖Compute NPV = 56,690
  - ❖Compute IRR = 32.66%
- *Should the company replace the equipment?* **Yes**

Summary

- **Net Capital Spending** is money spent on fixed assets less money received from the sale of existing fixed assets

- For replacement project - **incremental cash flows**
  - Change in depreciation
  - All the cash flow consequences of selling the old machine today instead of at the end of its life

Unequal Lives Projects

Learning objectives

Be able to evaluate alternative projects with "unequal lives"

Mutually Exclusive Unequal Life Projects

- Suppose our firm is planning to expand and we have to select 1 of 2 machines. They differ in terms of economic life.
- How do we decide which machine to select?

The after-tax cash flows are:

Year	Machine 1	Machine 2
0	(45,000)	(45,000)
1	20,000	12,000
2	20,000	12,000
3	20,000	12,000
4		12,000
5		12,000
6		12,000

► Assume a required return of 14%

Example: Unequal Life Projects

Step 1: Calculate NPV

- NPV_1 = \$1,432
- NPV_2 = \$1,664

- So, does this mean #2 is better?
- Not Necessarily – the two NPVs can't be compared simply as they are. Why?
  - They have non-equal useful lives

Example: Unequal Life Projects

Step 2: Calculate **Equivalent Annual Annuities (EAA)** (or Replacement Chains)

- **If we assume that each project will be replaced an infinite number of times in the future**, then we can convert each NPV to an annuity.
- Note that the projects' EAAs can be compared to determine which is the best project.

EAA: Simply find an equivalent annuity to the lump-sum NPV.

Example: Unequal Life Projects

Computing EAA

- Machine 1:

  Enter PV = 1,432, N = 3, I/Y = 14%

  <CPT> <PMT> **-$617**

- Machine 2:

  Enter PV = 1,664, N = 6, I/Y = 14%

  <CPT> <PMT> **-$428**

- What does this tell us?

Example: Unequal Life Projects

- This tells us that:
  - NPV_1 is equivalent to receiving $617 per year.
  - NPV_2 is equivalent to receiving $428 per year.

Example: Unequal Life Projects

Step 3: Apply Appropriate Decision Rule

Decision Rule:

Select the highest EAA → We would choose machine #1.

Another EAA Example

Machine A

- Initial Cost = $5,000,000
- Pre-tax operating cost = $500,000
- Straight-line depreciated over 5-year life taking into account the expected salvage value of $400,000

Machine B

- Initial Cost = $6,000,000
- Pre-tax operating cost = $450,000
- Straight-line depreciated over 8-year life taking into account the expected salvage value of $700,000

Example: EAA Analysis

- The machine chosen will be replaced indefinitely and neither machine will have a differential impact on revenue. No change in NOWC is required.
- The required return is 9% and the tax rate is 40%.
- Which machine would you choose? Are the annuities representing cash inflows or outflows?

EAA_A = -\$1,150,625.30; EAA_B = -\$1,025,574

Example: EAA Analysis

Machine A: Depreciate with salvage value.

	t = 0	t = 1 to 4	t = 5
Initial costs	-5m		
OCF (0-500k)*(1-0.4) + 920K*0.4		68,000	68,000
Salvage			400,000
NCF	**-5m**	**68,000**	**468,000**

Enter cashflows into <CF> worksheet, I = 9% and compute NPV, you should get -4,475,531.16.

Enter NPV amount into PV, 5<N> and compute <PMT>, you get **1,150,625.30.**

Example: EAA Analysis

Machine B: Depreciate with salvage value.

	t = 0	t = 1 to 7	t = 8
Initial costs	-6m		
OCF (0-450k)*(1-0.4) + 662.5K*0.4		-5,000	-5,000
Salvage			700,000
NCF	**-6m**	**-5,000**	**695,000**

Enter cashflows into <CF> worksheet, I = 9% and compute NPV, you should get -5,676,367.70.

Enter NPV amount into PV, 8<N> and compute <PMT>, you get **1,025,574.20.**

Example: EAA Analysis

Machine A	Machine B
-$1,150,625.30	**-$1,025,574.20**

This is a cost. So you should select the one with the *less negative* EAA, or interpreted as the lower ***Equal Annual Cost*** **(EAC)** → We will choose Machine B.

Note that only incremental cash flows are required. Since revenue/sales information are the same for both machines, they are irrelevant and can be left out.

Summary

EAA is useful to compare two projects with unequal project life

- Assuming that the projects can be repeated
- First, calculated the NPV of the project
- Second, calculate the EAA and compare the periodic payments

Comprehensive example

APPENDIX: A Comprehensive Example
(including the effects of inflation)

Proposed Project

- Total depreciable cost
  - Equipment: $200,000
  - Installation: $40,000
- Changes in working capital
  - Inventories will rise by $25,000
  - Accounts payable will rise by $5,000
- Effect on operations
  - New sales: 150,000 units/year @ $2/unit
  - Variable cost: 60% of sales

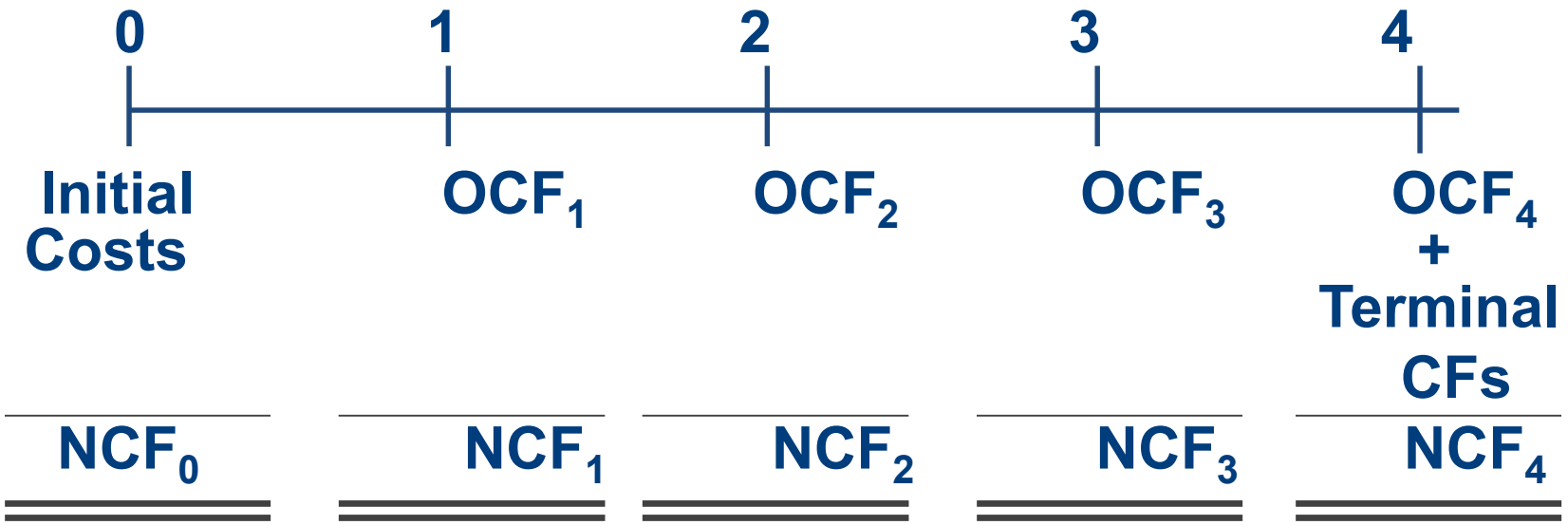
Comprehensive Example: Proposed Project

- Life of the project
  - Economic life: 4 years
  - Straight-Line Fully Depreciated over 4 years
    - $240,000/4 = $60,000 per year
  - Salvage value: $25,000
- Tax rate: 40%
- WACC: 10%

Determining Project Value

Estimate relevant cash flows

- Calculating annual operating cash flows
- Identifying changes in working capital
- Calculating terminal cash flows



Initial Year Net Cash Flow

- Find ΔNOWC.
  - Increase in inventories of $25,000
  - Funded partly by an increase in A/P of $5,000
  - ΔNOWC = $25,000 – $5,000 = $20,000
- Combine ΔNOWC with initial costs (because this investment in WC must be done at start of the project).

Equipment	-$200,000
Installation	-40,000
ΔNOWC	-20,000
Net CF_0	**-$260,000**

Annual Operating Cash Flows (OCF)

Pro-forma Income Statement (in ’000s)

Revenues	$300
- Op. Costs (60%)	-180
- Depreciation	- 60
EBIT	60
Tax (40%)	- 24
Net Income	36
+ Depreciation	60
= Operating CF	$**96**

NOTE: Bottom Up Approach used here as there is no interest expense

Terminal Net Cash Flows

Recovery of NOWC	**$20,000**
Net Salvage Value	**$15,000**
Salvage value	25,000
- Tax on Gain @40%	-0.4*(25,000 – 0) = -10,000
Terminal CF	**$35,000**

Additional Facts

Should a $50,000 building improvement cost from the previous year be included in the analysis?

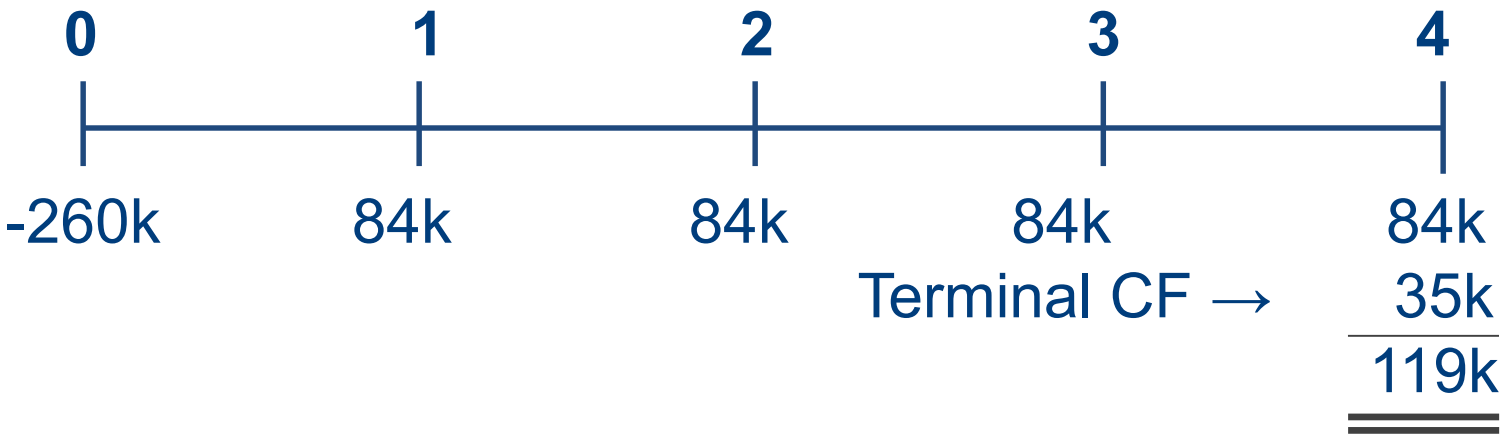
- No, the building improvement cost is a **sunk cost** and should not be considered.
- This analysis should only include incremental investment.

Additional Facts

If the facility could be leased out for $20,000 per year, would this affect the analysis?

- Yes, by accepting the project, the firm foregoes a possible annual cash flow of $20,000, which is an opportunity cost to be charged to the project.
- The relevant cash flow is the annual **after-tax opportunity** cost:
  - *After-tax* opportunity cost = $20,000 $(1 - T_C)$
    = $20,000(0.6)
    = $12,000 $\Rightarrow$ CFFA = $96K – $12K = $84K

Proposed Project's Cash Flow Timeline

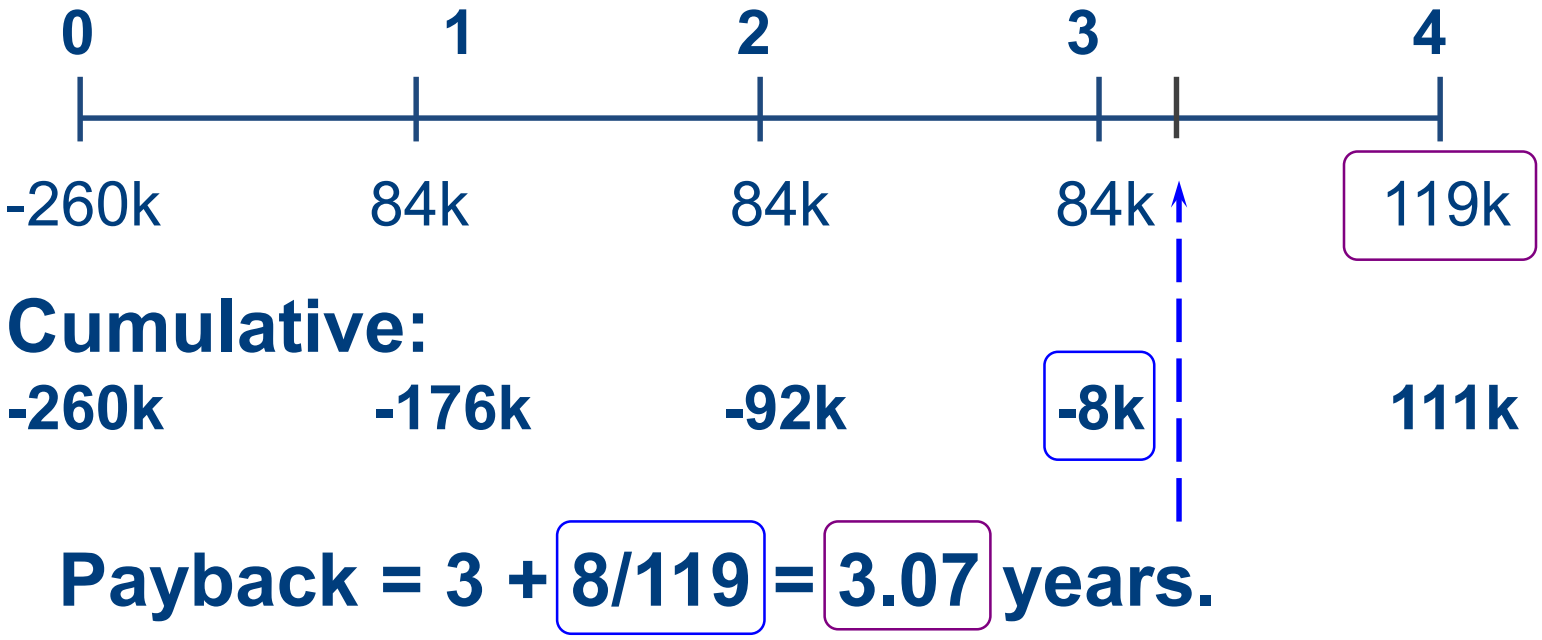


- Find the PV using PV factors and/or enter CFs into financial calculator <CF> register, and enter I/YR = 10%.

  ⇒ NPV = $30,174

  ⇒ IRR = 14.96%

Evaluating The Project: Payback Period



The Impact of Inflation

What if there is expected annual inflation of 10%, is NPV biased?

- Yes, if inflation is not incorporated into the cash flow projections. This is because inflation is incorporated into the discount rate (recall that we normally use *nominal* discount rates which do reflect inflation).
- Therefore, when inflation is not reflected in the cash flow projections, then given nominal discount rates, this creates a downward bias on PV.
- Hence, inflation should be built into Cash Flow forecasts.

The Impact of Inflation

Annual operating cash flows, if expected annual inflation = 10%

Inflation directly reflected here

	1	2	3	4
Revenues (10% annually)	**330**	**363**	**399.3**	**439.23**
Op. Costs (60% of Rev)	**-198**	**-217.8**	**-239.58**	**-263.538**
- Depreciation	**-60**	**-60**	**-60**	**-60**
EBIT	**72**	**85.2**	**99.72**	**115.692**
- Tax (40%)	-28.8	-34.08	-39.888	-46.277
Net Income	**43.2**	**51.12**	**59.832**	**69.415**
+ Depreciation	**60**	**60**	**60**	**60**
Operating CF	**103.2**	**111.12**	**119.832**	**129.415**

Inflation not reflected here

Final Note: The Stand-Alone Principle

- The **stand-alone principle** allows us to analyze each project in isolation from the firm simply by focusing on incremental cash flows.
- Viewing projects as “mini-firms” with their own assets, revenues and costs allows us to evaluate the investments separately from the other activities of the firm.
- By viewing projects as “mini-firms”, we imply that the firm as a whole constitutes a portfolio of mini-firms (i.e. mini-projects). As a result, the value of the firm equals the combined value of its components.