

Making Capital Investment Decisions

F305 Intermediate Corporate Finance

Troy Adair
Fall 2025

Slide Set A5 – Capital Investments

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Reminder

Company request for final project
due by Wednesday, Sep 17 at 5 PM.

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Overview

- Incremental Cash Flows
- Pro Forma Financial Statements and Project Cash Flows
- Alternative Definitions of Operating Cash Flow
- Some Special Cases of Discounted Cash Flow Analysis

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Incremental Cash Flows

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The Rules Governing Incremental Cash Flows

Incremental cash flows are the difference between a firm's future cash flows with a project and those without the project.

- Any cash flow that exists regardless of whether or not a project is undertaken is **not relevant**.
- Sunk costs** have already been incurred and cannot be removed and therefore **should not** be considered in an investment decision.
- Opportunity cost** is the most valuable alternative that is given up if a particular investment is undertaken and **should** be counted.

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The Rules Governing Incremental Cash Flows

NWC changes arising because of a project usually need to "lead" it.

We will **not** include interest paid or any other financing costs (e.g., dividends or principal repaid) because those costs are already in the r we use to value the cash flows.

Taxes **should be** included, but at the marginal rate(s) pertaining above and beyond the firm's current operations.

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Pro Forma Financial Statements and Project Cash Flows

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Project Cash Flows

To develop the cash flows from a project, recall that cash flow from assets has three components:

1. Operating cash flow.
2. Capital spending.
3. Changes in net working capital.

Once we have estimates of the components of cash flow, we will calculate cash flow for our minifirm:

$$\begin{aligned} \text{Project cash flow} &= \text{Project operating cash flow} \\ &\quad - \text{Project change in net working capital} \\ &\quad - \text{Project capital spending.} \end{aligned}$$

Where operating cash flow = Earnings before interest and taxes + Depreciation - Taxes

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Depreciation

For projects, you might be asked to use 1 of several types of depreciation:

- MACRS
- Straight-Line
- Straight-Line with No Half-Year Convention
- Bonus depreciation or Section 179 expensing

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Bonus Depreciation and Section 179 Deductions

Federal bonus depreciation for 2025 is 100% for qualifying business property acquired and placed in service after January 19, 2025. This change was enacted by the One Big Beautiful Bill Act (OBBA), signed into law on July 4, 2025.

- Bonus depreciation allows businesses to deduct a significant portion of an asset's cost upfront, accelerating the tax savings compared to standard depreciation. Unlike Section 179 expensing, bonus depreciation can be used to create a net operating loss for the business.
- Qualified property includes:
 - Tangible business assets with a useful life of 20 years or less, including machinery, equipment, computers, and furniture.
 - Used property, provided it is new to the taxpayer.
 - Qualified improvement property (QIP), which refers to interior improvements made to a nonresidential building after it was placed in service.
 - Certain vehicles, if used more than 50% for business purposes.

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Section 179 Deductions

In 2025, the Section 179 deduction allows eligible businesses to immediately expense up to \$2.5 million of the cost of qualifying equipment and software purchased and put into service during the year. This change was the result of the "One Big Beautiful Bill Act" passed in July 2025.

For tax year 2025, the limits for the Section 179 deduction are:

- Maximum deduction: \$2,500,000.
- Total equipment spending cap: The deduction begins to phase out dollar-for-dollar once equipment purchases exceed \$4,000,000.
- Full phase-out: The deduction is entirely eliminated when purchases reach \$6,500,000 (\$4,000,000 plus \$2,500,000).
- Qualifying vehicles: For sport utility vehicles and certain other heavy vehicles with a gross vehicle weight rating (GVWR) of more than 6,000 pounds, the maximum deduction is capped at \$31,300.

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Bonus Depreciation vs. Section 179 Deductions

Feature	Bonus Depreciation	Section 179 Deduction
Deduction limit	No dollar limit on the deduction.	Has an annual maximum deduction limit (\$2.5 million for 2025).
Phase-out	No phase-out based on total purchases.	Deduction begins to phase out if total purchases exceed a certain threshold (\$4 million for 2025).
Income limitation	Can create a net operating loss.	Deduction is limited to the business's taxable income.
Strategy	Businesses often apply the Section 179 deduction first, then use bonus depreciation for any remaining qualifying costs.	Offers flexibility, particularly for small and mid-sized businesses, even with bonus depreciation at 100%.

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Sample Project 10-1

You have been asked by the president of your company to evaluate the proposed acquisition of a new special-purpose truck for \$60,000. The truck falls into the MACRS three-year class, is not eligible for either bonus depreciation or Section 179 expensing, and will be sold after three years for \$20,000. Use of the truck will require an increase in NWC (spare parts inventory) of \$2,000. The truck will have no effect on revenues, but it is expected to save the firm \$20,000 per year in before-tax operating costs, mainly labor. The firm's marginal tax rate is 21 percent. What will the cash flows for this project be?

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19 Year	0	1	2	3	4	5
20 Sales	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21 - Fixed Costs	\$0.00	\$20,000.00	\$20,000.00	\$20,000.00	\$0.00	\$0.00
22 - Variable Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23 - Depreciation	\$0.00	-\$19,998.00	-\$26,670.00	-\$8,886.00	\$0.00	\$0.00
24 EBIT	\$0.00	\$2.00	-\$6,670.00	\$11,114.00	\$0.00	\$0.00
25 - Taxes	\$0.00	-\$0.42	\$1,400.70	-\$2,333.94	\$0.00	\$0.00
26 "Net Income"	\$0.00	\$1.58	-\$5,269.30	\$8,780.06	\$0.00	\$0.00
27 + Depreciation	\$0.00	\$19,998.00	\$26,670.00	\$8,886.00	\$0.00	\$0.00
28 OCF	\$0.00	\$19,999.58	\$21,400.70	\$17,666.06	\$0.00	\$0.00
29 -ΔNWC	-\$2,000.00	\$0.00	\$0.00	\$2,000.00	\$0.00	\$0.00
30 -ΔFA	-\$60,000.00	\$0.00	\$0.00	\$16,733.66	\$0.00	\$0.00
31 Total Cash Flow	-\$62,000.00	\$19,999.58	\$21,400.70	\$36,399.72	\$0.00	\$0.00

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Sample Project 10-2

You are evaluating a project for The Farstroke golf club, guaranteed to correct that nasty slice. You estimate the sales price of The Farstroke to be \$400 per unit and sales volume to be 1,000 units in year 1; 1,500 units in year 2; and 1,325 units in year 3. The project has a three-year life. Variable costs amount to \$225 per unit and fixed costs are \$100,000 per year. The project requires an initial investment of \$165,000 in assets, which can be depreciated using SL depreciation (with the half-year assumption). The actual market value of these assets at the end of year 3 is expected to be \$35,000. NWC requirements at the beginning of each year will be approximately 20 percent of the projected sales during the coming year. The tax rate is 21 percent and the required return on the project is 10 percent. What change in NWC occurs at the end of year 1? What is the operating cash flow for the project in year 2?

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9	Yearly Levels of NWC	\$ 80,000.00	120,000.00	106,000.00	0.00	
10						
11	Depreciable Basis of Initial Investment in Fixed Assets	\$ 165,000.00				
12	Type of Depreciation	SL				
13	Class Life	3				
14	Salvage Value	\$ 35,000.00				
15						
16	Tax Rate	21%				
17	Cost of Capital	10%				
18						
19	Year	0	1	2	3	4
20	Sales	\$0.00	\$400,000.00	\$600,000.00	\$530,000.00	\$0.00
21	- Fixed Costs	\$0.00	-\$100,000.00	-\$100,000.00	-\$100,000.00	\$0.00
22	- Variable Costs	\$0.00	-\$225,000.00	-\$337,500.00	-\$298,125.00	\$0.00
23	- Depreciation	\$0.00	-\$27,505.50	-\$54,994.50	-\$54,994.50	\$0.00
24	EBIT	\$0.00	\$47,494.50	\$107,505.50	\$76,880.50	\$0.00
25	- Taxes	\$0.00	-\$9,973.85	-\$22,576.16	-\$16,144.91	\$0.00
26	"Net Income"	\$0.00	\$37,520.66	\$84,929.35	\$60,735.60	\$0.00
27	+ Depreciation	\$0.00	\$27,505.50	\$54,994.50	\$54,994.50	\$0.00
28	OCF	\$0.00	\$65,026.16	\$139,923.85	\$115,730.10	\$0.00

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Alternative Definitions of Operating Cash Flow

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The Tax Shield Approach

Tax shield approach views OCF as having two components:

What the project's cash flow (EBIT) would be if there were no depreciation expense + depreciation tax shield:

$$OCF = (\text{Sales} - \text{Costs}) \times (1 - T_c) + \text{Depreciation} \times T_c$$

In our previous example, for Year 1:

$$OCF = (\$400,000 - \$325,000) \times (1 - .21) + \$27,505.50 \times .21 \\ = \$59,250 + \$5,776.16 = \$65,026.16$$

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Some Special Cases of Discounted Cash Flow Analysis

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Sample Project 10-3 (Evaluating Cost-cutting Proposals)

Suppose we are considering automating some part of an existing production process. The necessary equipment costs \$80,000 to buy and install. The automation will save \$22,000 per year (before taxes) by reducing labor and material costs. Assume the equipment has a five-year life and is depreciated to zero on a straight-line basis over that period. It will actually be worth \$20,000 in five years. Should we automate? The tax rate is 21%, and the discount rate is 10%.

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	A	B	C	D	E	F	G
1	Reset	Reset					
2							
3	Project Evaluation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
4	Estimated Unit Sales						
5	Estimated Selling Price per Unit						
6	Estimated Variable Costs per Unit						
7	Estimated Fixed Costs						
8	Yearly Levels of MVIC						
9							
10							
11	Depreciable Basis of Initial Investment in Fixed Assets	\$ 80,000.00					
12	Type of Depreciation	SL/RetHalf					
13	Class Life						
14	Salvage Value	\$ 20,000.00					
15							
16	Tax Rate	21%					
17	Cost of Capital	10%					
18							
19	Year	0	1	2	3	4	5
20	Sales	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21	- Fixed Costs	\$0.00	\$22,000.00	\$22,000.00	\$22,000.00	\$22,000.00	\$22,000.00
22	- Variable Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23	- Depreciation	\$0.00	\$16,000.00	\$16,000.00	\$16,000.00	\$16,000.00	\$16,000.00
24	-EBIT	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
25	- Taxes	\$0.00	\$1,260.00	\$1,260.00	\$1,260.00	\$1,260.00	\$1,260.00
26	-Net Income*	\$0.00	\$4,740.00	\$4,740.00	\$4,740.00	\$4,740.00	\$4,740.00
27	+ Depreciation	\$0.00	\$16,000.00	\$16,000.00	\$16,000.00	\$16,000.00	\$16,000.00
28	-OCF	\$0.00	\$20,740.00	\$20,740.00	\$20,740.00	\$20,740.00	\$20,740.00
29	-ΔNWC	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
30	-ΔFA	\$80,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$18,000.00
31	Total Cash Flow	\$-80,000.00	\$20,740.00	\$20,740.00	\$20,740.00	\$20,740.00	\$38,740.00
32							
33	NPV		\$14,114.15				

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Sample Project 10-4 (To Buy or Not To Buy)

We are considering the purchase of a \$200,000 computer-based inventory management system. It will be depreciated straight-line to zero over its four-year life. It will be worth \$30,000 at the end of that time. The system will save us \$60,000 before taxes in inventory-related costs. The relevant tax rate is 21 percent. Because the new setup is more efficient than our existing one, we will be able to carry less total inventory and thus free up \$45,000 in net working capital. What is the NPV at 16 percent? What is the DCF return (the IRR) on this investment?

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1	Reset						
2	Reset						
3	Project Evaluation	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
4	Estimated Unit Sales						
5	Estimated Selling Price (per unit)						
6	Estimated Variable Costs (per unit)						
7	Estimated Fixed Costs						
8	Yearly Levels of NWC						
9	Depreciable Basis of Initial Investment in Fixed Assets						
10	Type of Depreciation						
11	Class Life						
12	Salvage Value						
13	Tax Rate						
14	Cost of Capital						
15							
16							
17							
18							
19	Year	0	1	2	3	4	5
20	Sales	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21	- Fixed Costs	\$0.00	\$60,000.00	\$60,000.00	\$60,000.00	\$60,000.00	\$0.00
22	- Variable Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23	- Depreciation	\$0.00	-\$50,000.00	-\$50,000.00	-\$50,000.00	-\$50,000.00	\$0.00
24	-EBIT	\$0.00	\$10,000.00	\$10,000.00	\$10,000.00	\$10,000.00	\$0.00
25	- Taxes	\$0.00	-\$2,100.00	-\$2,100.00	-\$2,100.00	-\$2,100.00	\$0.00
26	Net Income	\$0.00	\$7,900.00	\$7,900.00	\$7,900.00	\$7,900.00	\$0.00
27	+ Depreciation	\$0.00	\$50,000.00	\$50,000.00	\$50,000.00	\$50,000.00	\$0.00
28	OCF	\$0.00	\$57,900.00	\$57,900.00	\$57,900.00	\$57,900.00	\$0.00
29	-ΔNWC	\$45,000.00	\$0.00	\$0.00	\$0.00	\$45,000.00	\$0.00
30	-ΔFA	-\$200,000.00	\$0.00	\$0.00	\$0.00	\$23,100.00	\$0.00
31	Total Cash Flow	-\$155,000.00	\$57,900.00	\$57,900.00	\$57,900.00	\$25,900.00	\$0.00
32							
33	NPV						
34	IRR						

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Sample Project 10-5 (To Buy or Not To Buy, altered depreciation)

We are considering the purchase of a \$200,000 computer-based inventory management system. **We will be able to use bonus depreciation on this project.** It will be worth \$30,000 at the end of that time. The system will save us \$60,000 before taxes in inventory-related costs. The relevant tax rate is 21 percent. Because the new setup is more efficient than our existing one, we will be able to carry less total inventory and thus free up \$45,000 in net working capital. What is the NPV at 16 percent? What is the DCF return (the IRR) on this investment?

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1	Reset	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
2	Project Evaluation						
3	Estimated Unit Sales						
4	Estimated Selling Price						
5	Estimated Variable Cost						
6	Estimated Fixed Costs						
7	Yearly Levels of NWC						
8							
9							
10	Depreciable Basis of Initial Investment in Fixed Assets						
11	Type of Depreciation						
12	Class Life						
13	Salvage Value						
14	Tax Rate						
15	Cost of Capital						
16	Year						
17							
18							
19							
20							
21							
22							
23							
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Sample Project 10-6 (Setting the Bid Price)

Imagine we are in the business of buying stripped-down truck platforms and then modifying them to customer specifications for resale. A local distributor has requested bids for five specially modified trucks each year for the next four years, for a total of 20 trucks in all. We need to decide what price per truck to bid.

- Suppose we can buy the truck platforms for \$10,000 each.
- Facilities we need can be leased for \$24,000 per year.
- Labor and material cost for modification is about \$4,000 per truck.
- Total cost per year will be $\$24,000 + 5 \times (\$10,000 + \$4,000) = \$94,000$.

What price per truck should we bid if we require a 20% return?

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1	Reset	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
2	Project Evaluation						
3	Estimated Unit Sales						
4	Estimated Selling Price						
5	Estimated Variable Cost						
6	Estimated Fixed Costs						
7	Yearly Levels of NWC						
8							
9							
10	Depreciable Basis of Initial Investment in Fixed Assets						
11	Type of Depreciation						
12	Class Life						
13	Salvage Value						
14	Tax Rate						
15	Cost of Capital						
16	Year						
17							
18							
19							
20							
21							
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Evaluating Equipment Options with Different Lives

This approach is necessarily on when the following are true:

- Possibilities under evaluation have different economic lives.
- We will need whatever we buy more or less indefinitely (That is, when it wears out, we will buy another one).

Imagine we are in the business of manufacturing stamped metal subassemblies. Whenever a stamping mechanism wears out, we must replace it with a new one to stay in business. We are considering which of two stamping mechanisms to buy. Ignoring taxes, which one should we choose if we use a 10% discount rate?

- Machine A costs \$100 to buy and \$10 per year to operate. It wears out and must be replaced every two years.
- Machine B costs \$140 to buy and \$8 per year to operate. It lasts for three years and must then be replaced.

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	A	B	C	D	E	F	G	H	I	J	K	L
1	Reset	Reset										
2												
3	Time	0	1	2	3	4	5	6	7	8	9	10
4	Project A CFs	-\$100	-\$10	-\$10								
5	Project B CFs	-\$140	-\$8	-\$8	-\$8							
6												
7	r	10%										
8												
9	NPV _A	-\$117.36	=NPV(B7,C4:L4)+B4									
10	NPV _B	-\$159.89	=NPV(B7,C5:L5)+B5									
11												
12	EAC _A	-\$67.62	=PMT(B7,COUNT(C4:L4),-B9)									
13	EAC _B	-\$64.30	=PMT(B7,COUNT(C5:L5),-B10)									

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Project Analysis Chapter 10

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