

The Project's Business Case – A Simple Example...

	A	B	C	D	E
1	Project Cash Flow Statement				
2					
3	Discount Rate:	20%			
4					
5		Year			
6		0	1	2	3
7	Cash Flows from Operations		\$51,725	\$51,725	\$51,725
8	Cash Flows from ΔNWC	-\$20,000			\$20,000
9	Cash Flows from CAPEX	-\$90,000			
10	Total Project Cash Flows	-\$110,000	\$51,725	\$51,725	\$71,725
11					
12	PV (Year 1-3)	\$120,532	=NPV(B3, C10:E10)		
13	Initial Investment (Year 0):	\$110,000	= -B10		
14	NPV:	\$10,532	=B12 - B13		
15					
16	IRR:	25.7%	=IRR(B10:E10)		
17					
18	Cumulative Cash Flows:	-\$110,000	-\$58,275	-\$6,550	\$65,175
19					
20	Payback Period (Years):	2.1	=2 + (\$6,550/\$71,725)		

Let's build a project cash flow statement...

The Project's Business Case – A Simple Example...

The Project's Cash Flows...

Project's Cash Flows =

- After-Tax Cash Flows from Operations
- Cash Flows from Δ NWC
- Cash Flows from Capital Spending



Let's see how this works in practice...

A Simple Example...

You work for a small craft distillery that decides to go into the artisanal hand sanitizer business. It is evaluating an investment in equipment and inventory to expand production to meet the burgeoning demand.

Based on the following, prepare a 3-year after-tax cash flow analysis and decide whether the investment is worth it, using NPV, IRR and Payback Period as your decision criteria.

Unit Sales per year: 50,000

Price per unit: \$4.00

Variable Cost per unit:: \$2.50

Fixed Costs (Prod'n O/H): \$17,500

Inventory Requirement: \$20,000

New Equipment Cost: \$90,000

Depreciation Schedule: 3-year, Straight Line,
no salvage value

Corporate Tax Rate: 21%

Company's Discount Rate: 20%

Cash Flows from Operations...

Step 1: Create the Project's Income Statement (a Pro Forma in this case!)

	Year		
	1	2	3
Revenues (50,000 x \$4)	\$200,000	\$200,000	\$200,000
Cost of Goods Sold: Variable Costs (50,000 x \$2.50)	\$125,000	\$125,000	\$125,000
Production Fixed Costs (O/H)	\$17,500	\$17,500	\$17,500
Gross Profit	\$57,500	\$57,500	\$57,500
Operating Expenses			
Depreciation (\$90,000 / 3)	\$30,000	\$30,000	\$30,000
Operating Income ("EBIT")	\$27,500	\$27,500	\$27,500
Taxes (21%)	\$5,775	\$5,775	\$5,775
Net Income	\$21,725	\$21,725	\$21,725

Cash Flows from Operations...

Step 2: Convert the income statement into cash flows...

$$\text{Cash Flows from Operations} = \text{EBIT} + \text{Depreciation} - \text{Taxes}$$

*Operating
Income*



*Add Back Depreciation
(a non-cash expense)*

*Taxes
Paid*

Cash Flows from Operations...

Step 2: Convert the income statement into cash flows...

$$\text{Operating Cash Flow} = \text{EBIT} + \text{Depreciation} - \text{Taxes}$$

	Year		
	1	2	3
Revenues (50,000 x \$4)	\$200,000	\$200,000	\$200,000
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Taxes (21%)	\$5,775	\$5,775	\$5,775
Net Income	\$21,725	\$21,725	\$21,725



	Year		
	1	2	3
EBIT	\$27,500	\$27,500	\$27,500
Depreciation	+\$30,000	+\$30,000	+\$30,000
Taxes	-\$5,775	-\$5,775	-\$5,775
Cash Flow from Operations	\$51,725	\$51,725	\$51,725

Cash Flows from Changes in Net Working Capital...

Step 3: Determine the annual change in Net Working Capital...

$$\Delta \text{NWC} = \text{NWC (End of Year)} - \text{NWC (End of Previous Year)}$$

A positive ΔNWC implies inventory was added during the year (a cash outflow)


A negative ΔNWC implies inventory was sold during the year (a cash inflow)

$$\text{Cash Flow} = - \Delta\text{NWC}$$


Cash Flows from Changes in Net Working Capital...

Step 3: Determine the annual change in Net Working Capital...


	Year			
	0	1	2	3
NWC	\$20,000	\$20,000	\$20,000	\$0
$\Delta \text{NWC} (\text{Year}_t - \text{Year}_{t-1})$	\$20,000	\$0	\$0	-\$20,000
Cash Flow from ΔNWC	-\$20,000	\$0	\$0	+\$20,000



Cash is spent to build inventory at the beginning of the year



Inventory levels stay the same from the beginning of the year to the end



Cash is received as remaining inventory is sold off during the year

Cash Flows from Capital Investments...

Step 4: Determine the cash flows associated with the CAPEX

The cost of the equipment and when it occurred

*The equipment costs \$90,000, purchased in cash
at the beginning of the project (Time = 0)*

	Year			
	0	1	2	3
CAPEX	\$90,000			
Cash Flow from CAPEX	-\$90,000			

The Project's Cash Flow Statement...

Step 5: We now assemble the Project's Cash Flow Statement...

	Year			
	0	1	2	3
Cash Flow from Operations		\$51,725	\$51,725	\$51,725
Cash Flow from Δ NWC	-\$20,000			\$20,000
Cash Flow from CAPEX	-\$90,000			
Total Project Cash Flow	-\$110,000	\$51,725	\$51,725	\$71,725



Note: our initial investment (time = 0) includes the CAPEX plus the investment in inventory!

Now we have everything we need to do our project valuation.

The Project Valuation: NPV, IRR and PBP

Step 6: Perform the project valuation based on its after-tax cash flows...

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NPV = \$10,532
IRR = 25.7%
PBP = 2.1 years

After all that work, this looks like a good investment!

Next Time...

A more realistic (and complex) project valuation analysis!



Credits & References

Slide 12: Making a plan by allvision, Adobe Stock (197977054.jpeg).