M&A deal - The Jeremy roofing valuation business case - impact of higher depreciation charges on all 3 financial statements, and thus on valuation

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What We Will Cover Today

- Introduction
- Jeremy Roofing case study
- Financial Statement Waterfall
- How can changes in depreciation and net income affect different financial statements
- Impact of depreciation changes on valuations
- Q&A

Jeremy roofing co.

Jeremy roofing Business Case

- Jeremy roofing company is a small midwestern company that has expanded to the east coast, and it was in the process of being acquired by a private equity fund based in the US.
- This analysis will show how differences in depreciation expectations will impact financial statements differently and as a result, the final valuation of the firm.

Jeremy roofing company three financial statements

How the 3 financial statements are linked?

- Focus on the Net income account:
- Net Income Account is calculated through the income statement
- For the Cash Flow statement, net income is the first line item. Add back non-cash charges and working capital adjustments to calculate change in cash and equivalents
- For the balance sheet, net income flows into shareholder’s equity via retained earnings (RE). In addition, the change in cash, as reported in the cash flow statement impacts the company’s cash and equivalents.

Step by Step - Income Statement

- From Revenue…
- You subtract COGS…
- In order to get to Gross Profit. From Gross Profit,
- You subtract Operating expenses (SG&A)…
- To arrive into Income from operations.
- You expense Other income (expenses)…
- To get into Net Income Before Tax.
- You take away Income Tax Expense at nominal rate…
- To arrive into Net Income. This account will start your SCF
- You add how much funds you had at the beginning or the year…
- To arrive at Retained Earnings. This account links to the Balance Sheet.

Jeremy roofing Income Statement

•Revenue	1,104.00
•COGS	740.00
•Gross Profit	364.00
•Operating expenses (SG&A)	286.00
•Income from operations	78.00
•Other income (expenses)	15.00
•Net Income Before Tax	92.00
•Income Tax Expense	14.00
•Net Income	78.00
Beginning of the Year Balance	(61.00)
Retained Earnings	17.00

Statement of Cash Flows

- From Net Income for the year (last line on IS), *you…*
- *Add back* depreciation, amortization, and investment gains…
- *To arrive at* Cash derived from Operations.
- *You subtract* Working Capital (+AR, +INV, -AP)
- *You add the* current portion of LTD and Income tax payable to
- *Arrive at* **Cash from Operating activities (1).**
- *You add* acquisition of PP&E to investment proceeds *to arrive at..*
- **Cash Flows from Investing Activities (2).**
- *You add* loans from shareholders and debt issuance *to arrive at…*
- **Cash Flows from Financing Activities (3).**
- *Add* Cash flows from **(1) Operating + (2) Investing + (3) Financing =** Net Increase in Cash
- Cash Resources at the beginning of the year
- Cash Resources at the end of the year. This account is the cash account - Balance Sheet

Jeremy roofing
Statement of Cash Flows

•Net Income for the year	78.00
Amortization	18.00
Gain on disposal of investment	(16.00)
•Cash derived from Operations	80.00
•Decrease (increase) in Working Capital	
AR	8.00
Prepaid expenses	(1.00)
Inventory	(2.00)
AP	(9.00)
LTD - current portion	25.00
Income tax payable	14.00
•Cash from Operating activities	115.00
Acquisition of PP&E	(2.00)
Proceeds from disposal of investment	61.00
•Cash Flows from Investing Activities	59.00
Advances from (repayments to) shareholders	(180.00)
Acquisition of Long Term Debt	86.00
•Cash Flows from Financing Activities	(94.00)
•Net Increase in Cash Resources	80.00
Cash (deficiency) resources - beginning of the year	(69.00)
•Cash (deficiency) resources - End of the year	11.00

Balance Sheet

- On Assets, your first account is the last account from SCF - Cash
- On current assets, you also have AR and Inventory.
- Your Non-current assets include PP&E and real estate.
- Current and non-current assets = Total assets.
- On Liabilities, you can list on your current liabilities:
- Bank loans, AP, current portion of LTD, income tax payable.
- Your LTD is your non-current liability.
- Shareholders Equity
- Stated Capital
- Retained Earnings (Profit) come from the Net Income Account.
- And Net Income impacts Cash on SCF, and on BS

Jeremy roofing Balance Sheet

Assets	
Cash	11.00
Accounts Receivables	43.00
Inventory	160.00
PP&E	60.00
Total assets	274.00
Liabilities	
Bank Loan	-
AP	82.00
LTD - current portion	25.00
Income tax payable	14.00
Due to shareholders	50.00
Total outstanding Long-Term Debt	86.00
Total liability	257.00
Shareholders Equity	
Stated Capital	
Retained Earnings (Profit)	17.00
Liabilities + Equity =	274.00

Changes in Depreciation affect firm value

- Depreciation is an operating expense at the IS
- For the SCF, depreciation for the period is accounted under operating activities…
- But it is added back because it is a <u>non-cash expense</u>.
- For the BS, total depreciation (includes the period), is placed under the asset, and reduces PP&E

Putting all statements together

<table>
<tr><th colspan="2">Income Statement</th><th colspan="2">SCF</th><th colspan="2">Balance Sheet</th></tr>
<tr><td>Revenue</td><td></td><td>Net Income</td><td></td><td>Cash</td><td></td></tr>
<tr><td>Expense</td><td></td><td>Adjustments for:</td><td></td><td>AR</td><td></td></tr>
<tr><td>SG&A</td><td></td><td>Amortization of tangible</td><td></td><td>Inv</td><td></td></tr>
<tr><td>Amortization of tangible</td><td></td><td>Amortization of intangible</td><td colspan="3">PP&E (There is no account for depreciation, you need to estimate it by subtracting past period from current period)</td></tr>
<tr><td>Amortization of intangible</td><td></td><td></td><td></td><td>Intangible Assets</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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Mixing it up

- How does it affect all 3 Financial Statements if one adds U$ 10 Depreciation charge at a 40% Tax Rate?
- First, understand how this charge will affect each different financial statement. It is easier to start with IS, then SCF, then BS
- For the IS, it increase OPEX, so reduces U$ 10 of income from operations. But you get a (U$ 10X 40%) U$ 4 tax shield and thus a (U$ 10-U$ 4 = U$ 6) net income reduction.

Continue to mix it up with the SCF

- For the SCF it will start with Net income, which decreased by U$ 6 (as seen on the IS). We will adjust for non-cash charges, increasing it by U$ 10. Then, all that is added to Cash Flow from operations, giving a net positive difference of U$ 4. That is the tax shield (very important to create value).

Balance Sheet

- For the BS, you will have an increase of U$ 4 on the cash account;
- You will also increase accumulated depreciation by U$ 10
- That will reduce the size of PP&E and intangibles by U$ 10
- So, Net Total Assets decreases by U$ 6 (U$ 4 increase in ST Assets and a U$ 10 decrease in LTA)
- Thus, Retained earnings decreases by U$ 6 (As Net income fell by U$ 6, as seen on the IS)

Jeremy roofing – IS impact by U$ 10 rise in depreciation charges

Income Statement	2018
•Revenue	1,104.00
•COGS	740.00
•Gross Profit	364.00
•Operating expenses (SG&A)	296.00
•Income from operations	68.00
•Other income (expenses)	15.00
•Net Income Before Tax	83.00
•Income Tax Expense	12.63
•Net Income	70.37
Beginning of the Year	(61.00)
Retained Earnings	9.37

Jeremy roofing – SCF impact

Statement of Cash Flow	2018
•Net Income for the year	70.37
•Amortization	28.00
Gain on disposal of investment	(16.00)
•Cash derived from Operations	82.37
•Decrease (increase) in Working Capital	
AR	8.00
Prepaid expenses	(1.00)
Inventory	(2.00)
AP	(9.00)
LTD - current portion	25.00
Income tax payable	14.00
•Cash from Operating activities	117.37
Acquisition of PP&E	(2.00)
Proceeds from disposal of investment	61.00
•Cash Flows from Investing Activities	59.00
advances from (repayments to) shareholders	(180.00)
Acquisition of Long Term Debt	86.00
•Cash Flows from Financing Activities	(94.00)
•Net Increase in Cash Resources	82.37
Cash (deficiency) resources - beginning of the year	(69.00)
•Cash (deficiency) resources - End of the year	13.37

Jeremy roofing – Balance Sheet impact by U$ 10 rise in depreciation charges

•Assets	
Cash	13.37
Accounts Receivables	43.00
Inventory	160.00
PP&E	50.00
Total assets	266.37
•Liabilities	
Bank Loan	-
AP	82.00
LTD - current portion	25.00
Income tax payable	14.00
Due to shareholders	50.00
Total outstanding Long-Term Debt	86.00
Total liability	257.00
•Shareholders Equity	
•Stated Capital	
•Retained Earnings (Profit)	9.37
Liabilities + Shareholders Equity =	266.37

Jeremy roofing co. financial valuation impact of differences in depreciation

In general:
To get to Free Cash Flow you…

- 1 + Sales Revenue
- 2- Operating Costs
- 3- Taxes
- 4 – Net Investment (CAPEX)
- 5- Changes in Working Capital
- 6 = Free Cash Flow

A Word on WC

- Before you start, it is important to remember that WC refers to the firm's day-to-day operations. It is current assets minus current liabilities.
- So, when you are taking away WC from Sales Revenue, you can either subtract WC as a single account, or you can subtract AR and Inventory and add back AP.
- In forecasting, one can assume that WC should grow according to firm's growth (unless there is a massive efficiency gain, which is unlikely to happen at Jeremy's roofing company.

Financial Valuation

- You start with revenue, and take away COGS and SG&A to get to EBIT.
- For the forecast here, it was assumed a 12% revenue growth rate (this is a stable but somewhat solid growth business, as people always need handyman work on their homes, and prices rise steadily).
- It is also assumed a 7% stable margin rate
- You take away income tax is at 40% (pre-Trump)
- You get to EBIAT.

Financial Valuation II

- Now you will start with your adjustments. You will add back non-cash expenses, and you will subtract non-cash revenues.
- Hence, you will add back depreciation
- You will take away AR, prepaid expenses and inventory
- You will add back AP
- You take away other income
- To get to Net Income Before Tax
- Then you subtract CAPEX
- To get to UFCF

Financial Valuation

- The next step will be discounting it back by the discount rate, which should reflect the risk of the firm (often times, WACC can be used as a discount rate).
- Add the first five years of the firms' cash flows
- Add to that the terminal value of the firm estimated using this formula:
- **TV = (FCFn x (1 + g)) / (WACC – g)**
- Add market value of debt (on this small company, we assume book=market, as there is no info on tenure, premium)
- You will get the market value of the firm

Zi Excels…

Regular Depreciation

Years	2018	2019	2020	2021	2022	2023
•Revenue	1,104.00	1,236.48	1,384.86	1,551.04	1,737.17	1,945.63
Growth rate (12%)						
EBIT	78.00	87.36	97.84	109.58	122.73	137.46
Margin stable at 7%	7%					
Income tax at 40% (nominal)	31.20	34.94	39.14	43.83	49.09	54.99
EBIAT	46.80	52.42	58.71	65.75	73.64	82.48
•Amortization	18.00	18.00	18.00	18.00	18.00	18.00
Straigth line depreciation						
AR	8.00	8.96	10.04	11.24	12.59	14.10
Prepaid expenses	1.00	1.12	1.25	1.40	1.57	1.76
Inventory	2.00	2.24	2.51	2.81	3.15	3.52
AP	9.00	10.08	11.29	12.64	14.16	15.86
•Other income (expenses)	15.00	16.80	18.82	21.07	23.60	26.44
CAPEX	12.00	13.44	15.05	16.86	18.88	21.15
Growth rate (12%)						
UFCF	35.80	37.94	40.33	43.01	46.01	49.37
		1.20	1.44	1.73	2.07	2.49
Year		1	2	3	4	5
UFCF		31.61	28.01	24.89	22.19	19.84
Sum of First years	126.54					
Terminal value	299.12					
present value of Terminal Value	120.21					
Total present value of the firm	246.75					
Value of the debt (book = value)	86					
Total value of the firm	332.75					

Adding U$ 10 M to depreciation

Years	2018	2019	2020	2021	2022	2023
•Revenue	1,104.00	1,236.48	1,384.86	1,551.04	1,737.17	1,945.63
Growth rate (12%)						
EBIT	68.00	76.16	85.30	95.54	107.00	119.84
Margin stable at 7%	6%					
Income tax at 40% (nominal)	27.20	30.46	34.12	38.21	42.80	47.94
EBIAT	40.80	45.70	51.18	57.32	64.20	71.90
•Amortization	28.00	28.00	28.00	28.00	28.00	28.00
Straigth line depreciation						
AR	8.00	8.96	10.04	11.24	12.59	14.10
Prepaid expenses	1.00	1.12	1.25	1.40	1.57	1.76
Inventory	2.00	2.24	2.51	2.81	3.15	3.52
AP	9.00	10.08	11.29	12.64	14.16	15.86
•Other income (expenses)	15.00	16.80	18.82	21.07	23.60	26.44
CAPEX (add 10 for continuous growth and depreciation)	12.00	13.44	15.05	16.86	18.88	21.15
Growth rate (12%)						
UFCF	39.80	41.22	42.80	44.58	46.57	48.80
		1.20	1.44	1.73	2.07	2.49
Year		1	2	3	4	5
UFCF		34.35	29.72	25.80	22.46	19.61
Sum of First years	131.93					
Terminal value	295.64					
present value of Terminal Value	118.81					
Total present value of the firm	250.75					
Value of the debt (book = value)	86					
Total value of the firm	336.75					

What’s the conclusion??

- The conclusion is simple:
- If you add U$ 10M to your depreciation per year
- And if you complete by adding U$ 10 M to CAPEX so that you can continue to finance your growth through investment and have something to depreciate over time (for our example, here).
- Then,
- The difference will be U$ 4 Million
- But how??? We add back extra 10M and we only grow in value by U$ 4Million?

Here it is the math:

- You decrease your operational income, as your non-cash revenue goes up, and thus you need to adjust it by reducing your EBIT by U$ 10 Million. As a result, when you take taxes away at 40%, you get a U$ 4 Million tax shield.
- The additional value created for the firm is the tax shield, or U$10M X 40% tax rate = U$ 4 M
- Since this additional value does not repeat itself (I.e., you cannot depreciate more indefinitely, bc you need PP&E to depreciate, we increased CAPEX at the same pace, so the only bump in value comes from the first year. Hence, the only additional value created on this deal by increasing depreciation is because of the…

Here's the truth

- Tax shield

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